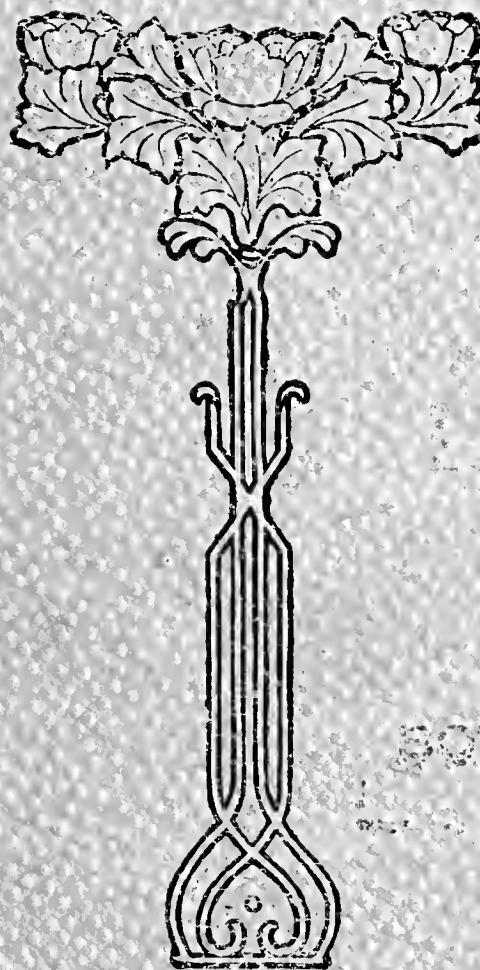


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PROCEEDINGS OF THE FLORIDA STATE HORTICULTURAL SOCIETY *for* 1913



PUBLISHED BY THE SOCIETY

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In Memoriam



EDWARD OKLE PAINTER

Charter Member. Secretary 1904-1913. Horticultural Benefactor.

Born at Ontario, New York, Nov. 3, 1860

Died at Jacksonville, Florida, May 22, 1913

PROCEEDINGS
OF THE
TWENTY-SIXTH ANNUAL
MEETING
OF THE
FLORIDA STATE
HORTICULTURAL SOCIETY
HELD AT
DELAND, APRIL 29, 30,
MAY 1 AND 2, 1913



COMPILED BY THE SECRETARY
PUBLISHED BY THE SOCIETY

CONSTITUTION

ARTICLE 1. This organization shall be known as The Florida State Horticultural Society, and its object shall be the advancement of Horticulture.

ARTICLE 2. Any person may become a member of the Society by subscribing to the Constitution and paying one dollar. Any person may become a Life Member of the Society by subscribing to the Constitution and paying ten dollars.

ARTICLE 3. Its officers shall consist of a President, three Vice-Presidents, Secretary, Treasurer, and Executive Committee of three, who shall be elected by ballot at each annual meeting. After the first election their term of office shall begin on the first day of January following their election.

ARTICLE 4. The regular annual meeting of this Society shall be held on the second Tuesday in April, except when otherwise ordered by the Executive Committee.

ARTICLE 5. The duties of the President, Vice-President, Secretary and Treasurer shall be such as usually devolve on those officers. The President, Secretary and Treasurer shall be ex-officio members of the Executive Committee.

ARTICLE 6. The Executive Committee shall have authority to act for the Society between annual meetings.

ARTICLE 7. The Constitution may be amended by a vote of two-thirds of the members present.

BY-LAWS

1. The Society year shall be co-extensive with the calendar year, and the annual dues of members shall be one dollar.

2. All bills authorized by the Society or its Executive Committee, for its legitimate expenses, shall be paid by the Secretary's draft on the Treasurer, O. K.'d by the President.

3. The meetings of the Society shall be devoted only to Horticultural topics, from scientific and practical standpoints, and the Presiding Officer shall rule out of order all motions, resolutions and discussions tending to commit the Society to partisan politics or mercantile ventures.

Florida State Horticultural Society

OFFICERS ELECT FOR 1913:

PRESIDENT:

H. HAROLD HUME, Glen St. Mary.

VICE-PRESIDENTS:

H. B. STEVENS, DeLand; W. C. TEMPLE, Winter Park; L. B. SKINNER,
Dunedin.

SECRETARY:

*E. O. PAINTER, Jacksonville.

SUCCESSOR BY APPOINTMENT:

MISS OKLE C. PAINTER, Jacksonville, Fla.

TREASURER:

W. S. HART, Hawks Park.

EXECUTIVE COMMITTEE:

P. H. ROLFS, Gainesville; E. S. HUBBARD, Federal Point; G. L. TABER,
Glen St. Mary.

President, Secretary and Treasurer, ex-officio.

*Deceased.

Standing Committees

Methods of Packing and Shipping Citrus Fruits.—S. F. Poole, Winter Haven, Fla.; Dr. O. W. Sadler, Mt. Dora, Fla.; David Scott, Arcadia, Fla.; F. D. Waite, Palmetto, Fla.

Methods of Handling Citrus Groves.—C. H. Thompson, Winter Haven, Fla.; L. B. Skinner, Dunedin, Fla.; C. M. Griffing, Jacksonville, Fla.; B. F. Floyd, Gainesville, Fla.; A. B. O'Hara, Rockledge, Fla.; Jack Peters, Tavares, Fla.

Irrigation.—T. Ralph Robinson, Terra Ceia, Fla.; D. C. Gillett, Tampa, Fla.; F. W. Stanley, Washington, D. C.

Vegetables.—C. H. Kennerly, Palatka, Fla.; J. J. Vernon, Gainesville, Fla.; L. LaTrobe Bateman, Tampa, Fla.; C. S. Bushnell, Arcadia, Fla.; H. H. Tussy, Alva, Fla.

Peaches, Deciduous Fruits and Nuts.—H. K. Miller, Monticello, Fla.; H. S. Graves, Gainesville, Fla.; Ira D. Soar, Dade City, Fla.

Insects and Diseases.—J. R. Watson, Gainesville, Fla.; W. W. Yothers, Orlando, Fla.; E. W. Berger, Gainesville, Fla.

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Tropical Fruits.—Dr. John Gifford, Coconut Grove, Fla.; Edward Simmonds, Miami, Fla.; E. A. Moreno, Tampa, Fla.; H. C. Henricksen, Trinidad, W. I.

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 Kent, A. M., Astatula, Fla.
 Kepler, R. J., Jr., DeLand, Fla., Box 121.
 Kerr, Mrs. Carrie L., Pierson, Fla.
 Kesley, T. A., Nashville, Tenn., R. F. D. No. 10.
 Kilborn, W. H., Vero, Fla.
 Kilkoff, Mrs. Eva T., Washington, D. C.
 King, William, Avon Park, Fla.
 King, W. G., St. Cloud, Fla.
 Kitching, George, Brooksville, Fla.
 Klemm, Mrs. Annie Marie, Winter Haven, Fla.
 Klemm, Richard, Winter Haven, Fla.
 Klepper, O. R., Chicago, Ill., 1537 Monroe St.
 Knox, Donald B., Bulow, Fla.
 Knox, L. B., Bulow, Fla.
 Koplin, George E., Winter Haven, Fla.
 Korssell, Dr. C. F. P., Josephine, Ala.
 Kresse, Charles G., Grand View-on-Hudson, N. Y.
 Kusano, Takao, Kagoshima-Imperial College of Agriculture, Japan.
- Lafon, N., Paisley, Fla.
 Lamont, A., White City, Fla.
 Landstreet, Mrs. G. F., Miami, Fla., Box 503.
 Lanouette, Frank I., DeLand, Fla.
 Leach, J. Milton, Joplin, Mo., 720 Kentucky Ave.
- Leatherman, J. R., Vienna, Va., R. F. D. No. 3.
 Ledbetter, W. T., Palatka, Fla.
 Leonard, George V., Hastings, Fla.
 Leonard, Mrs. George V., Hastings, Fla.
 Levering, M. E., Philadelphia, Pa., 1164 North 63rd Street.
 Levis, Norris, St. Petersburg, Fla.
 Lewis, W. J., Limona, Fla.
 Ley, Edward F., Arcadia, Fla.
 Lee, J. H., Oviedo, Fla.
 Lee, W. E., Thonotosassa, Fla.
 Lee, W. J. Jacksonville, Fla., 1357 Riverside Ave.
 Linger, E. C., Winter Haven, Fla.
 Long, Mrs. C., Mingo Junction, Ohio.
 Loss, Emil, Tampa, Fla., Care Florida Grower.
 Love, Dr. S. R., DeLand, Fla.
 Lord, Charles, Ft. Pierce, Fla.
 Lowe, James J., Micco, Fla.
 Lundberg, Ed. V., Crescent City, Fla.
 Lynch, Capt. George M., Gainesville, Fla.
- Mace, J. P., Lake Helen, Fla.
 Mace, L. P., Lake Helen, Fla.
 Magid, Louis B., Atlanta, Ga., Appalachian Apple Orchards.
 Manville, Miss Helen F., Orange City, Fla.
 Mann, Edward L., Manville, Fla.
 Mann, L. W., Tampa, Fla., 507 Madison St.
 Manning, S. D., New Smyrna, Fla.
 Marcellus, C. N., Chicago, Ill., 2614 N. Kedzie Boulevard.
 Marks, H. A., Winter Haven, Fla.
 Marshall, Mrs. A. E., Clearwater, Fla.
 Mathis, W. B., Glen St. Mary, Fla.
 Maull, E. N., Jacksonville, Fla.
 Mead, Daniel W., Madison, Wis., 530 State St.
 Mead, Theodore L., Oviedo, Fla.
 Meffert, J. M., Ocala, Fla.
 Mendell, George E., Hawks Park, Fla.
 Mendell, Mrs. George E., Hawks Park, Fla.
 Merrell, B. E., St. Petersburg, Fla.
 Merrell, George B., Anona, Fla.
 Merrell, Herman, St. Petersburg, Fla.
 Merrell, Mrs. Herman, St. Petersburg, Fla.
 Metcalf, G. C., Jacksonville, Fla., No. 46 W. Bay Street.
 Middleton, W. C., St. Augustine, Fla.
 Miller, Charlie, DeLand, Fla.
 Miller, C. H., Goulds, Fla.
 Moltz, F. A., Helena, Mont., 16 Edwards St.
 Moore, C. V., Eldred, Fla.
 Moore, Quintin, Omaha, Neb., 3117 Marcy St.
 Moore, R. S., Naomi, La.
 Moree, George W., Tillman, Fla.
 Moreman, M. S., Switzerland, Fla.
 Moreno, E. A., Tampa, Fla., Care Florida Grower.
 Morton, Caroline L., Dunedin, Fla.
 Morton, Miss Gertrude P., Dunedin, Fla.
 Morton, P. S., Dunedin, Fla.
 Morrison, D. A., Jr., Jacksonville, Fla., No. 921 May St.

FLORIDA STATE HORTICULTURAL SOCIETY

- Moses, Mrs. Clara N., West Palm Beach, Fla.
 Moses, Wallace R., West Palm Beach, Fla.
 Mosnat, H. R., Belle Plaine, Iowa.
 Mowbrey, Andrew, DeLand, Fla.
 Muir, Miss Jessie, Satsuma Heights, Fla.
 Munn, G. L., Fellsmere, Fla.
 Munson, F. W., Georgiana, Fla.
 Murrell, Geo. A., Chicago, Ill., 6617 Minerva Ave.
 MacDonald, R. D., Winter Park, Fla.
 McAdow, Mrs. P. W., Punta Gorda, Fla.
 McCabe, W. R., Chicago, Ill., 5628 S. Ashland Ave.
 McComb, James, Jr., Sanford, Fla.
 McCoy, C. W., Winter Haven, Fla.
 McCoy, Wilbur, Jacksonville, Fla.
 McDougal, Robert, Chicago, Ill., 319 Postal Tele. Building.
 McGarvey, Frank, Lorain, Ohio, 754 Washington Avenue.
 McIntyre, James, Miami, Fla.
 McKay, A. W., Washington, D. C., Department of Agriculture.
 McKenney, A. S. J., Stanton, Fla.
 McLaughlin, C. E., Ft. Myers, Fla.
 McLaughlin, C. O., Sanford, Fla.
 McMullen, I. L., Largo, Fla.
 McQuarrie, C. K., Pensacola, Fla., Gen. Del.
 Negus, C. R., Viking, Fla.
 Nevins, Thos. F., Merritt, Fla.
 Niles, L. D., Lucerne Park, Fla.
 Nissen, H. R., Evanston, Wyo.
 Niven, Prof. L. A., Atlanta, Ga., 909 Candler Bldg.
 Nordman, B. J., DeLand, Fla.
 Nordmann, Fred, New Smyrna, Fla.
 Norton, C. B., Palmetto, Fla.
 Noulie, E., Jacksonville, Fla.
 Nutt, R. L., Tavares, Fla.
 Nydegger, A. C., Winter Haven, Fla.
 Nye, A. J., Orlando, Fla.
 O'Hara, A. B., Rockledge, Fla.
 O'Hara, Mrs. A. B., Rockledge, Fla.
 Ohmer, C. J., West Palm Beach, Fla.
 Orchard, Paul W., Arcadia, Fla.
 Orton, S. W., Weeping Water, Neb.
 Osburn, F. B., Sutherland, Fla.
 Osteen, J. W., Altamonte Springs, Fla.
 Owen, Fred V., Satsuma Heights, Fla.
 Page, C. M., Winter Haven, Fla.
 Paine, Mrs. R. S., Nashua, Fla.
 Painter, Miss Okle, Jacksonville, Fla.
 Palmer, G. L., Lakeland, Fla.
 Parketon, John S., Thonotosassa, Fla.
 Patterson, J. A., Philadelphia, Pa., 130 So. 15th St.
 Pattillo, J. E., Oak Hill, Fla.
 Patton, E. F., Dawson, Canada.
 Pelot, W. A., Arcadia, Fla.
 Pelton, J. E., Potash, La.
 Pence, Eugene, Oakland, Cal., 942 Pine St.
 Perkins, J. W., DeLand, Fla.
 Perrin, R. G., Winter Haven, Fla.
 Perry, H. A., Pomona, Fla.
 Peterkin, George W., Mulberry, Fla.
 Peters, Jack, Tavares, Fla.
 Peterson, Geo. W., Lakeland, Fla.
 Peterson, John, Tampa, Fla., Care Tampa Grower.
 Peterson, U. C., Pierson, Fla.
 Pfyffer, John, Pulaski, Ind.
 Phillips, Dr. P., Orlando, Fla.
 Pierce, C. C., Arcadia, Fla.
 Pierson, J. R., Sharpes, Fla.
 Pinkerton, Worthley, Toronto, Can., 461 Ossington Avenue.
 Pixton, Allan B., Iona, Fla.
 Plank, F. E., DeLand, Fla.
 Player, Harry, Tampa, Fla., Box 752.
 Pond, F. S., Tavares, Fla.
 Potter, S., Salvador Madero y Clá S, en C Hda. De San Tiburcio, Zac, Mexico.
 Poole, S. F., Florence Villa, Fla.
 Poole, Mrs. S. F., Florence Villa, Fla.
 Prather, S. N., DeLand, Fla.
 Prevatt, A. B., Seville, Fla.
 Price, Francis A., Wilmington, Del., 117 W. 17th Street.
 Prouty, E., Arcadia, Fla.
 Prouty, T. C., Amora, Ill.
 Quinby, T. B., Tampa, Fla.
 Radclyffe-Cadman Bros., Narcoossee, Fla.
 Rahn, Wm. J., Gainesville, Fla., University of Florida.
 Raulerson, C. A., Oviedo, Fla.
 Raymond, W. W., Owanita, Fla.
 Reagan, John T., Bowling Green, Fla.
 Reasoner, E. N., Oneco, Fla.
 Redfield, G. H., Sewickley, Pa., 410 Thorn St.
 Reinhardt, John, Owensboro, Ky., 530 Fredrica St.
 Rembaugh, B. S., Ft. Lauderdale, Fla.
 Rich, Arthur A., Lamont, Fla.
 Richardson, C. O., Miami, Fla., Box 175.
 Richardson, E. L., Fellsmere, Fla.
 Richardson, Wm. C., Tampa, Fla.
 Richard, Geo. H., White City, Fla.
 Richtmann, Wm. M., Satsuma Heights, Fla.
 Richtmann, W. O., Satsuma Heights, Fla.
 Richtmann, Mrs. W. O., Satsuma Heights, Fla.
 Riggins, H. S., Winter Haven, Fla.
 Ringdahl, G., White City, Fla.
 Roberts, Dan U., Redland, Fla.
 Roberts, H., Fellsmere, Fla.
 Robinson, T. Ralph, Terra Ceia, Fla.
 Robinson, Mrs. T. Ralph, Terra Ceia, Fla.
 Robinson, W. E., Palmetto, Fla.
 Roe, Mrs. A., Arcadia, Fla.
 Rogerson, Herbert H., Palmetto, Fla., R. F. D.
 Rollinson, James W., Auburndale, Fla.
 Rose, Capt. R. E., Tallahassee, Fla.
 Rose, Mrs. R. E., Tallahassee, Fla.

FLORIDA STATE HORTICULTURAL SOCIETY

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- Rou, S. F., Lowell, Fla.
Rou, Mrs. S. F., Lowell, Fla.
Rutherford, W. J., Eustis, Fla.
- Sadler, J. H., Oakland, Fla.
Sadler, Dr. O. W., Mt. Dora, Fla.
Saeger, G. A., Ankona, Fla.
Sample, Mrs. J. W., Bartow, Fla.
Sample, J. W., Haines City, Fla.
Sampson, F. G., Quincy, Fla.
Sampson, Mrs. F. G., Quincy, Fla.
Sampson, H. O., Scranton, Pa.
Sammons, W. W., Chicago, Ill., Corn Ex. Nat. Bank.
Sams, John H., Courtenay, Fla.
Sande, Miss Van de J. E., New Smyrna, Fla.
Sands, N. Y., Ambridge, Pa.
Schabinger, J. J., Delray, Fla., Box 162.
Schafelberger, F. J., Hastings, Nebraska.
Schenk, G. H., Brooklyn, N. Y., 110 Court St.
Schnabel, John, Gainesville, Fla.
Schnarr, J., Orlando, Fla.
Schubert, U. J., Jacksonville, Fla., Care Armour Fertilizer Company.
Schumacher, E., Greendale, N. Y.
Schuyler, E. H., Cocoanut Grove, Fla.
Scott, David, Arcadia, Fla.
Selden, Paul H., DeLand, Fla.
Seyder, J. A., Jr., Orange City, Fla.
Shaw, Miss Eleanor G., Gainesville, Fla., Experiment Station.
Shepherd, F. W., Winter Park, Fla.
Shepherd, S. P., Winter Park, Fla.
Sheppard, Lewis H., DeLand, Fla., Box 272.
Shillaber, C. F., Portsmouth, N. H.
Siedenburg, A. E., Mingo Junction, Ohio.
Simmonds, Edward, Miami, Fla.
Sjostrom, L. H. O., Hallandale, Fla.
Skinner, B. C., Dunedin, Fla.
Skinner, Miss Elizabeth, Dunedin, Fla.
Skinner, L. B., Dunedin, Fla.
Skinner, Mrs. Mary E., Dunedin, Fla.
Smith, E. E., Wabasso, Fla.
Smith, Ernest F., Chicago, Ill., 120 W. Adams St.
Smith, Henry W., Bartow, Fla.
Smith, J. A., Fargo, Fla.
Smith, L. W., Haines City, Fla.
Sniveley, John A., Winter Haven, Fla.
Sniveley, Mrs. John A., Winter Haven, Fla.
Soar, J. J., Little River, Fla.
Soar, M. L., Dade City, Fla.
Soar, Mrs. S., Dade City, Fla.
Spaulding, C. F., DeLand, Fla.
Sperry, E. F., Orlando, Fla.
Stadil, Capt. C. E., White House, Fla.
Stanley, F. W., Washington, D. C., Department of Agriculture.
Stebbins, Dr. H. H., Thonotosassa, Fla.
Steiner, Joseph, San Francisco, Cal., 942 Hampshire Street.
Steere, Miss Anna E., Cocoanut Grove, Fla.
- Stevens, H. B., DeLand, Fla.
Stevens, H. E., Gainesville, Fla.
Stevens, J. A., Jacksonville, Fla., Box 187.
Stevens, L. E., Fulford, Fla.
Stevens, S. M., Lakeland, Fla.
Stevens, R. E., Daytona, Fla.
Stewart, I. A., DeLand, Fla.
Stewart, Tom B., DeLand, Fla.
Stillman, Fred A., Daytona, Fla.
Stillman, Howard Y., Daytona, Fla.
Stokes, Walter P., Philadelphia, Pa., 219 Market Street.
Story, S. L., Eustis, Fla.
Strawn, Theo., DeLand, Fla.
Street, A. W., Ormond, Fla.
Stringfellow, R. R., Pineland, Fla.
Stringfellow, W. A., DeLand, Fla.
Stull, Jay, Winter Haven, Fla.
Sturrock, W., Miami, Fla.
Summers, Mrs. Mary M., Kissimmee, Fla.
Sundell, Rev. J. F., Lake Mary, Fla.
Switzer, Dr. C. R., Evanston, Ill., 1323 Elmwood Avenue.
- Taber, Mrs. G. L., Glen St. Mary, Fla.
Talton, E. H., DeLand, Fla.
Taylor, E. G., Buffalo, N. Y., Buffalo Savings Bank Building.
Taylor, John S., Largo, Fla.
Taylor, W. D., Ocala, Fla., Box 576.
Tenney, F. F., Federal Point, Fla.
Tenney, Mrs. F. F., Federal Point, Fla.
Tenney, J. F., Federal Point, Fla.
Tenney, Miss Leona, Federal Point, Fla.
Terrell Land & Development Co., Rerdell (via Terrell), Fla.
Thirsk, John T., Winter Haven, Fla.
Thomas, Jefferson, Philadelphia, Pa., Morris Bldg.
Thompson, C. H., Winter Haven, Fla.
Thompson, Mrs. C. H., Winter Haven, Fla.
Thompson, J. C., Bartow, Fla.
Thompson, Ralph P., Winter Haven, Fla.
Thompson, Mrs. S. B., Jacksonville, Fla., 2214 Laura Street.
Thrush, Arthur W., Brooklyn, N. Y., 145 Somers Street.
Tilden, A. M., Winter Haven, Fla.
Tilden, C. H., Oakland, Fla.
Tilden, Mrs. C. H., Oakland, Fla.
Tilden, L. W., Winter Garden, Fla.
Tillinghast, B. F., Crescent City, Fla.
Tillinghast, Mrs. B. F., Crescent City, Fla.
Tillinghast, Miss Helen, Crescent City, Fla.
Tischler, P., Jacksonville, Fla.
Tonner, Wm. E., Citra, Fla.
Trabert, L. D., Evanston, Ill., 1123 Madison St.
Tourtellotte, L. E., Limona, Fla.
Townsend, C. Marot, Philadelphia, Pa., 500 N. Broad Street.
Tucker, Mrs. H. S., Merritt, Fla.
Tucker, Lyle D., Stuart, Fla.

FLORIDA STATE HORTICULTURAL SOCIETY

- Tucker, R. M., Orange City, Fla.
 Turner, C. L., Winter Haven, Fla.
 Tussey, H. H., Alva, Fla.
 Tysen, J. R., Jacksonville, Fla.
 Tyler, A., Glen St. Mary, Fla.
- Van Dittmar, Miss Jonnie, Ft. Pierce, Fla.
 Vanderpool, Isaac, Maitland, Fla.
 Varn, J., Bradenton, Fla.
 Vernon, J. J., Gainesville, Fla.
 Vickers, Geo. F., Fellsmere, Fla.
 Von Luttichau, H., Jacksonville, Fla., 1957 Forbes Street.
 Vorsheim, Henry G., Chicago, Ill., 4221 Park Ave.
 Voorhis, Dr. V. H., DeLand, Fla.
 Vrooman, C. E., Hawks Park, Fla.
- Waddell, E. A., Miami, Fla.
 Wakelin, Amos, Tavares, Fla.
 Wakelin, Guilford M., Tavares, Fla.
 Wakelin, Mrs. G. M., Tavares, Fla.
 Walker, Mrs. Edna L., Gifford, Fla.
 Walker, Eli C., Gifford, Fla.
 Walker, G. Fitch, Moravia, Cayuga County, N. Y.
 Walker, G. P., Belleair, Fla.
 Walker, N. S. A., Chicago, Ill., 3404 So. Western Avenue.
- Ward, C. Fred, Winter Park, Fla.
 Warren, Geo. E., Miami, Fla.
 Watkins, S. W., Largo, Fla.
 Webster, O. B., DeLand, Fla.
 Wells, W. G., Arcadia, Fla.
 Wheldon, Francis C., Orange City, Fla.
 Whipp, C. Leslie, Jacksonville, Fla., Care Mills The Florist.
 Whitaker, W. R., Manatee, Fla.
 White, Frank M., Attleboro, Mass., Box 166.
- White, Herbert C., Putney, Ga.
 White, K. M., Crescent City, Fla.
 Whitten, Wm. M., Punta Gorda, Fla., Box 198.
 Whittle, F. M., Jacksonville, Fla., Virginia-Carolina Chemical Company.
 Wightman, L., Tampa, Fla., Box 576.
 Wilmhurst, H. G., DeLand, Fla.
 Wilson, Bettie, Hawthorne, Fla., R. F. D. No. 1.
 Wilson, C. H., Clermont, Fla.
 Wilson, Mrs. L. A., Clermont, Fla.
 Wilson, C. M., Weirsdale, Fla.
 Willard, Ben, DeLand, Fla.
 Williams, H. E., Tampa, Fla., R. F. D. No. 2, Box 151 A.
 Williams, U. S., Eustis, Fla.
 Willingham, W. J., Lane Park, Fla.
 Willingham, Mrs. W. J., Lane Park, Fla.
 Wills, Francis L., Sutherland, Fla.
 Winston, Mr., Orlando, Fla., Care Schnarr & Co.
 Wise, V. H., Auburndale, Fla.
 Wiig, Dr. I. C. J., Kenmare, N. Dak.
 Wolfenden, J. L., Evanston, Fla.
 Wright, Edgar A., Tampa, Fla.
 Wright, S. B., DeLand, Fla.
 Wyckoff, John S., Citra, Fla.
 Wyman, A. F., Bradenton, Fla.
 Wyman, Mrs. A. F., Bradenton, Fla.
- Yearby, J. R., Orlando, Fla.
 Yeats, James G., Orlando, Fla., R. F. D. No. 2.
 Yothers, W. W., Orlando, Fla.
 Young, Lewis, Orange City, Fla.
 Young, George F., McKinlay, Isle of Pines.
- Zacher, Jerome, Racine, Wis., R. F. D. No. 1, Box 82.
- Zetrouer, R. G., Jacksonville, Fla., Care Virginia-Carolina Chemical Company.

Proceedings of the Twenty-Sixth Annual Meeting of the Florida State Horticultural Society

The twenty-sixth annual meeting of the Florida State Horticultural Society convened in DeLand, April 29, and even during the early sessions of the convention it was believed that we would have a record-breaking attendance, and this belief was fulfilled later on, when the register showed a larger number of members in attendance than at any previous meeting of the Society.

The sessions of the Society were held in the comfortable and commodious opera house, and the entertainment and reception committees of the various city organizations did everything in their power to contribute to the comfort and pleasure of the members of the Society, and make them feel at home.

Numerous excursions to nearby points of interest, the famous DeLeon Springs, the St. Johns River at Beresford, and other places were made, and hundreds of automobiles were placed at the disposal of the members of the Society for drives through the beautifully shaded streets of the "Athens of Florida."

The President and faculty of the John

B. Stetson University entertained the Society with a musical and dramatic entertainment in the spacious auditorium of the University. The Music Department of the institution and the Department of Dramatic Art contributed largely to the pleasure of the guests.

At this annual meeting the usual number of interesting papers were read, covering topics of general interest, and these papers brought out in a greater degree than heretofore interesting and profitable discussions.

The compilers of this Report have endeavored to preserve and reproduce a very large portion of these discussions, realizing that many valuable points and a great deal of information is received by the general discussions of the papers, we have been careful in the preparation of this section. In a large body it is very difficult to preserve and to record all of the discussions, and the compilers wish to explain to the members who may have taken part in the various discussions, and whose remarks are not recorded in the book, that the omission is not on ac-

count of a lack of value of their remarks, but simply that it is not possible to record every detail of the discussions.

The Crop Pest Bill, which is of vital interest and importance to our horticulturists, likewise received the careful consideration of the members, and the bill as submitted was approved and endorsed, and action taken to present the views and wishes of the horticulturists of Florida to the members of the State Legislature and National Congress.

The addresses of welcome and the responses were gems of rhetoric, and cordially expressed the hospitality on the one hand and grateful recognition on the other.

The usual spirited contest over the place of the next annual meeting developed during the last session of the meet-

ings. There were three entries in the race: Arcadia, Gainesville, and Palatka, each of them being fortified with cordial invitations from their municipal organizations, boards of trade, etc., and the claims of the respective places were ably presented by logical speakers. The question was decided by a majority vote, and Palatka won the race by a safe majority.

The preparation of the Year Book for many years past has been the work of our late Secretary, Mr. E. O. Painter. His untimely death occurred before he had completed the work of compilation, and hence it was necessary for the work to be finished by others. We have done the best possible under the circumstances, and crave the kind indulgence of our members for any omissions that may be noted.

Addresses of Welcome and Responses

ON BEHALF OF THE CITY BUSINESS MEN'S LEAGUE

Arthur E. Douglass

Mr. President, Members of the Horticultural Society, Ladies and Gentlemen:

It is indeed a privilege and a pleasure to have the opportunity of welcoming an organization that for twenty-six successive years has continued its work and prospered in it all. Your Society is to be congratulated, not alone for the work of the past, but upon the present prospects and those of the future.

I remember some time since—if I were to tell you how long ago you would know how old I am—I used to hear disparaging remarks with reference to those who had an interest in the things of the soil, and I am glad that the time has come when there is a full recognition of the relations between the business world and those who are closely allied to Nature and enjoy the privileges that they alone can enjoy. I suppose I am in a better position to judge of the privileges Nature affords, having been born and bred on a small farm of two hundred acres, where I learned something of the opportunities there afforded, experienced something of the training and discipline which permitted me later to endure the

hard work demanded in an overburdened profession.

I do believe there is not only a great work to be accomplished, but there will be a full recognition in the years to come of the great work that is being done by the people on the farms and among the groves. May that time hasten when the value of the work which you are doing may be more fully realized; when all may realize that there is nothing worth while if the work being done by you is eliminated.

I want to say in behalf of the Business Man's Organization of this little city that they recognize, in some measure, at least, the value of the work that is being done by those about them, and I want to welcome you to our business places and assure you when you come you will find a hearty welcome and warm handshake. We will be pleased to make your acquaintance; we will be glad to let you know something about the things of this place, and we hope to make your stay something of a pleasure.

More than this, I wish to say that you will find in our town an opportunity to go to the rooms of the Woodmen of the World in the Dreka building, and

the Ladies' Club of this city will be glad to welcome you, especially the ladies among you, where you will find an opportunity to rest, an opportunity to write letters and chat, and we hope you will avail yourselves of it.

I also wish to call attention to the fact that our reading room is open, and you will have an opportunity to sit there and read or attend to correspondence.

More than this, I want to say that the business men of DeLand give you the heartiest kind of welcome; not merely as a matter of words, but as I have known them the last two and a half years, in a matter of deeds and actions. Though I am a comparative stranger among them, I know you will go a long way before you will find a group of men more ready to give a hearty welcome than those of the city of DeLand.

RESPONSE BY L. B. SKINNER

I want to say that I myself have already had the practical assurance of this hearty welcome of which Mr. Douglass speaks. I wanted to telephone very badly a few minutes ago and rushed into a place and asked them if I could use their telephone. The man said, "Yes, everything we have is free this week." (Laughter.)

Speaking of little cities: If you want to see a real little city, you ought to come to Dunedin. It is a gem. We have some things in common with you. We have oaks, the most beautiful oaks. I notice you pride yourselves upon your oaks, and you have reason to do so. The first thing I saw were your beautiful avenues. In speaking of DeLand, my brother spoke of the avenues of oaks, so you see your fame has spread abroad. Dunedin is called the Little City of Oaks on the West Coast.

We of the West Coast enjoy coming to the East Coast. Last year we journeyed to Miami; the year before we went

to Orlando, to Jacksonville, to Gainesville, to Daytona; we have gone all over the State. I do not know where we will go next time. But one thing that strikes me, is the pleasure afforded by these little journeys over the State. I don't know when I have enjoyed anything as much as Miami last year, and I know a great many others enjoyed it, too, because more of you have come to DeLand than went to Miami. I know we would regret missing these meetings, not only for the meetings themselves, but meeting each other. We would not miss making the acquaintance of the business men of DeLand—in a free way. (Laughter.) I don't know how they would be in a business proposition. The business men get a great deal out of the orange growers, there is no mistake about that. I have noticed down our way that we work like everything, and then turn what we have over to the business men. We do all we can to make them happy. (Laughter).

This spirit of rivalry for the location

of the next place of meeting is a fine thing. Some of the discussions we have, and some of the word battles we have, are really interesting. It keeps us from getting too settled in our ways. It reminds me of the Scotch couple who had lived together peacefully for their long married life. The husband was boasting that they had never had a quarrel and turned to his wife for her corroboration

"Yes," she said, with a sigh, "it has been peaceful, but oor dull."

If you want to see some heated discussions, I have no doubt we will have them this meeting, because I can see the pot boiling already. It is going to be exciting.

For a great many years this Society met, one year after another, without very much result. Perhaps I should not make

it that plain, but a number of people came to these meetings and dozed most peacefully through the reading of the papers, and went off home with no enthusiasm and possibly not much gained knowledge. But the minute we got some discussions in, things began to happen. I imagine at this meeting there will be discussions that will keep people awake.

When I first came to this country, I met an old Florida "representative" who seemed to be badly worn out. I asked him what was the matter. He said he had hunted hogs for five days *successfully* and never found a one. This Society has met for twenty-six years, and I leave you to judge results. This is the best looking crowd of orange growers, or any kind of people, I ever saw at one of our meetings before.

ON BEHALF OF THE TOWN OF DELAND AND STETSON UNIVERSITY

Dr. Lincoln Hulley

Mr. Chairman, Ladies and Gentlemen:

On behalf of the Mayor of the city, Mr. S. A. Wood, I extend to all of you a very cordial welcome to the city on this occasion. There is really no need for me to speak on behalf of the Mayor. He has an idea, however, that on public occasions like this he should keep out of it. Last week he was elected the President of the State Bankers' Association, and when led to the platform to make a speech accepting the honor, his remarks were so straight to the point and so lucid

that a banker sitting beside me said, "That man is going to be a good presiding officer; he is clear and right to the point." So there is no need in my speaking on behalf of the Mayor. But on his behalf, and on behalf of the City Council, I extend to you a welcome.

But there is no need of speaking on behalf of the City Council. They also can speak for themselves, and on occasion they do it.

Then on behalf of the citizens of DeLand I extend a welcome to you. But

there is no need of speaking on behalf of the citizens, for each and every one will speak to you for themselves while you are here. One of the merchants has already spoken as recounted by the speaker just before, and he voices the feelings of the citizens, one and all.

Then on behalf of the Trustees of the University, I desire to extend to you a welcome. Now, it is hardly necessary to speak in their behalf; a good many of them are members of your organization. For instance, there is H. B. Stevens. He is a member of the Board of Trustees of the University and, I think, an officer in your Society. Then there is Mr. Painter, your Secretary. You have come to the home of Mr. Painter. He is always at home here. There is hardly a house, certainly none among the older citizens of this place, where he is not welcome. I tried to get him to take dinner with me tomorrow, but I guess I am too late. It looks as though his slate is already filled.

Some of you are strangers in the city of DeLand. Let me assure you that you are welcome. In olden times, when enemies were numerous, they had to mass the people in a limited area and then throw a wall around the occupied area and set a watch against the intruders and invaders. There would be one or two or more gates through which entrance into the town or city could be made, which could be closed and locked against their enemies. So when the people wanted to show deference and confidence in a distinguished and loved guest, they would present to them the keys to the gates of the city. We, of course, can not do this

now, except figuratively speaking. But in the same spirit we present to you the keys of the city, and I extend to you a welcome on the part of the citizens and of the University. The students of the University will speak for themselves tomorrow evening, when you are to be their guests, and they are going to recite for you and sing for you and try to show you a good time generally.

So, on behalf of the Trustees of the University, its faculty and its students, as well as the Mayor, the Town Council and the citizens of DeLand, I extend to you a very cordial welcome.

Now, I am going to extend to you a welcome on the part of members of the Association who live out over this county. All the growers throughout the county are part of us here at DeLand. This is the county seat, and they come here for business in various ways, and in their behalf I wish to extend to you a generous and cordial welcome.

As I go about this beautiful State and visit the cities and towns in which you reside, I cannot help but marvel at the growing possibilities of Florida. This whole country is but comparatively recently discovered, and see what has been done in this hemisphere in the last four hundred years. And Florida has belonged to the United States only since 1819; not a full century. We have not had possession of it a hundred years, and see what it has become. People believed at one time it did not belong to anything but alligators and razor-back hogs, but now the finest people all over these United States come here to make their homes.

I am impressed with the variety of the

output of Florida. Last week, coming through the Hastings region, I looked out on either side of the car, before reaching Hastings, and after we left there, and saw the whole region being put under cultivation. I saw that 78,000 barrels of potatoes were grown in the Hastings region this past year. What a tremendous crop!

If you go to Sanford, the Celery City —what an output there is from there! Then down around Fort Pierce; do you see the acreage given over to the cultivation of the pineapple? Go a little further down and you see the tomato plants grown in the crevices of the coral rock.

Over in Webster they grow cucumbers; in Manatee you see lettuce; in Plant City, strawberries; in Quincy, the specialty is tobacco; around Tampa, you find oranges; in other parts of the State you find sea island cotton, or Long Island cotton, I don't know what it is. (Laughter.) And every other section of the State has its specialty.

Now, my friends, on behalf of the growers whose welcome I am extending to you this evening, I want to say in this favored county of Volusia, we grow *all* these things. (Laughter and applause.) Go out and ask John Alden, who courted Priscilla; he can grow anything on his place.

Let me give you a few statistics of what was done in the county of Volusia during the past year:

Corn: 3,071 acres under cultivation; yield, 39,690 bushels; value, \$31,852.

Sweet potatoes: 604 acres; 77,150 bushels; value \$46,290.

Sugarcane: 69 acres; 477 barrels syrup; value, \$7,145.

Field Peas: 323 acres; 2,536 bushels; value, \$5,072.

Field Pea Hay: 69 acres; 63 tons; \$1,260.

Hay, Native Grasses: 950 acres; 859 tons; value, \$17,180.

Millet: 6 acres; 11 tons; value \$180.

Peanuts: 81 acres; 1,350 bushels; value, \$2,025.

Wool: 8,340 fleeces; 27,270 pounds; value, \$5,455.

Velvet Beans: 67 acres; 385 bushels; value, \$770.

Velvet Bean Hay: 291 acres; 362 tons; value, \$7,240.

Cassava: 12 acres; 53 tons; value, \$410.

Onions: 26 acres; 5,000 crates; value, \$6,945.

Lettuce: 37 acres; 7,195 crates; value, \$7,530.

Celery: 19 acres; 3,970 crates; value, \$4,770.

Pepper: 5 acres, 740 crates; value, \$975.

Irish Potatoes: 607 acres; 70,822 bushels; value, \$89,758.

Cabbage: 71 acres; 8,075 crates; value, \$9,460.

Tomatoes: 89 acres; 12,445 crates; value, \$10,560.

Squashes: 1 acre; 110 crates; value, \$100.

Egg Plant: 6 acres, 1,180 crates; value, \$1,520.

Cucumbers: 13 acres; 2,965 crates; value, \$3,070.

Watermelons: 281 acres; 83 carloads; value, \$12,400.

English Peas: 2 acres; 120 crates; value, \$160.

Beets: 4 acres; 740 crates; value, \$870.

Beans: 16 acres; 1,530 crates; value, \$2,195.

Oranges: 414,135 bearing trees; 71,-
570 non-bearing trees; 386,100 boxes of
fruit; value, \$383,000.

Grapefruit: 26,220 bearing trees; 3,-
020 non-bearing trees; 25,970 boxes of
fruit; value, \$33,920.

Japan Persimmons: 219 trees; 197
crates; value, \$291.

Guavas: 576 crates; value, \$709.

Pecans: 1,461 bearing trees; 5,060

non-bearing trees; 392 bushels; value,
\$1,176.

Strawberries: 22 acres; 51,680 quarts;
value, \$8,775.

Pears: 1,074 bearing trees; 200 non-
bearing trees; 650 barrels; value, \$1,-
115.

Peaches: 53,520 bearing trees; 7,735
non-bearing trees; 31,270 bushels; value,
\$30,420.

Plums: 140 bearing trees; 200 non-
bearing trees; 130 bushels; value, \$130.

Grapes: 51,500 pounds; value, \$2,575.

And so the list goes on: Figs, horses,
colts, mules, goats, cattle, honey, honey,
honey, sheep, hogs, milch cows, and so
on, a great long list. Think of what a
tremendous output, taking the county as
a whole, this official list of products of
this county shows.

RESPONSE BY PROF. P. H. ROLFS

Mr. Chairman, Ladies and Gentlemen:

"Early to bed, and early to rise,
Read your Bible, and advertise."—

(Laughter and applause.)

Dr. Hulley, I thank you very much for the very hearty welcome you have extended to the Horticultural Society. DeLand, you know, is the Athens of Florida, and we are especially happy to get to this Athens. We have tried a great many times, but you know we could not quite make up our minds. We have tried it several times, and almost got here, but just missed it a little bit. Now, I can tell you how sorry we are we did not

come all the way. This time we *did* come all the way, and we are very glad of it.

We are glad to have discussions, and in the past have had all sorts of questions excepting those touching upon politics and mercantile ventures. The last time we shaved pretty close to it, because the President said we were discussing what he thought might be termed by some a mercantile venture, but I believe he was overruled. However, we got along all right.

As our friend Mr. Skinner said, we are to have some interesting discussions this

time, and I know for that reason we are glad to be in a peaceable community such as we find here at DeLand.

DeLand is justly proud of that great institution, Stetson University. I have visited it repeatedly, and always been welcomed. It is a model institution. I hope none of our Society will leave DeLand until they have at least visited many of its departments and various rooms there in the University. It will be well worth your while.

We find our welcome here to be especially warm, and I hope it will not be

long until we make up our minds to come back to DeLand. It is a most pleasant place, and we can spend our time here profitably. Not only are we welcome on occasions like this; we are welcomed individually as well, and I want to thank you for extending to us the hearty welcome you have given us tonight.

Mr. Chairman, I believe I will say nothing further in this connection, but I wish to thank the gentleman again for his hearty welcome to our Association.

President's Annual Address

H. Harold Hume

Members of the Florida State Horticultural Society, Ladies and Gentlemen:

Geography is an interesting study, a study of lands and seas and what grows thereon and therein, of tides and waves and winds, and sun and moon, of vegetation zones and isothermal lines, of peoples, manners, customs, of commerce and its ways. But most of us passed our geography examinations long ago, and promptly proceeded to forget most of it, as is the way with children, young and old. Though we have all dreamed dreams of people and things remote, our ideas of how these are related to us, of how they do or may touch us intimately is still too frequently a hazy dream.

Now, with me tonight, I want you to go back to the desk in the little country school house, or to the box or shelf where the old and worn school books are carefully packed away. We will get out that well-thumbed, dog-eared school atlas, very carefully and very reverently, that we may not disturb the dreams that still linger between its musty pages, and we'll open it where you and I first opened it perchance, at the map of the world.

Over on the western side of the Western Hemisphere we will begin our lesson, and locate Seattle, Portland, San Francisco, Los Angeles, then southward along

the coast of Mexico, but we shall not stop there, southward still and across the narrow neck of land called Panama. Then northward along the eastern coast and again we pass by Mexico, for we shall not stop there. A pall overhangs the land, the pall of internal strife, so northward still and around the coast of our own land again and we note Galveston, Houston, Port Arthur, New Orleans, Mobile, Pensacola, Tampa, Key West, Jacksonville and Savannah. A long trip! Why have we made it? Have you not noticed that in all these coast cities and towns, that channels are being deepened, obstructions removed, basins enlarged, docks increased in size and number, terminal facilities improved, railroads constructed, and that there are activities of all sorts connected with the commerce of the sea? Money has been, or will be, spent like the very water that washes their water fronts, millions upon millions of it. And again why?

The why is the Panama Canal. And this canal, our canal, though other ships will use it more than ours, is the cause of many movements in our present changing order of things. The eyes of the world are on it, the nations of the uttermost parts are preparing to use it. The dream of America's discoverers is about

to come true, the westward passage to China. The Hamburg American line is preparing for ten steamers per month through "Panama to the Orient." The Italian Government has heavily subsidized steamship lines for South American trade via Panama. Great Britain with her ships like unto the stars of Heaven is always ready. Japan, already almost in control of the Pacific Ocean commerce, will have three steamer lines from Japan through Panama direct to New York. All these and many more are preparing to take the utmost advantage of the new water way. The warfare of today, all about us, is the warfare of commerce. Let us look up all these places in our old school atlas and also note besides the location of Australia and Hawaii, and North Africa and Spain, France and Italy, Bermuda and Mexico. Now take one general memory-fixing glance of the world today and the routes of trade and close the book.

This old world is much as it was when we studied it years ago, much as it was when it came into being as the result of gigantic forces under the guidance of a Master Mind. It has been modified, it is true, by the never resting forces of nature, though these modifications are small as applied to the earth as a whole. But in another way it is not the same world, for man has stepped in, the American people, and with the digging of a huge ditch, the course of the sea trade of the whole world will be in a large measure altered, and for Florida, what? We shall see in our harbors more strange flags, at our docks more strange ships, and in our streets strange faces and

strange tongues. Commerce will flow into and through this State as never before. In this commerce in greater or less quantities there will be new fruits from new sources and old ones from old sources, all delivered on new ocean highways direct at our doors. New seeds, new plants, new shrubs and new trees will come. Besides and in addition to this, the reduction in tariff will bring in more fruits and more plants than ever before. If it does not, the bill will fail in its purpose.

The time is here when the fruit and vegetable growers and every individual who is interested directly or indirectly in the agricultural wealth of this State should wake up to the conditions by which we are confronted.

With the fruits and plants that come, new insects will come for fruits and plants and insect pests travel together. It is a broad statement, but do you know that every serious insect that attacks our orange and grapefruit trees is a foreign insect, and a very large proportion of our most serious pests of vegetable and farm crops are also foreign insects. Do you consider the whitefly to be a serious pest? Or the purple scale, or the long scale, or the chaff scale, or the mealy bug? Or does the cotton farmer look upon the cotton stainer or the boll weevil as his friends? And do you think it an exaggeration that insect pests and plant diseases in this State levy annual toll on our crops in excess of one-third of their value? Or would it be nearer right to say in excess of forty per cent., or even fifty per cent. Whatever the amount it is enormous, it is a tax of millions of

dollars annually, all due to the attacks of insects and diseases, most of which are not natives, and which with proper care might have been kept out.

Do we want more? Have all the injurious ones been introduced and have they gained a foothold? By no means. Let me say with all the emphasis I possess, "There are insects in other lands, which our conditions exactly suit, and which if introduced would in the enormous damage they are capable of doing, make us forget the ravages of those we now have, serious though they may be."

Do we want the Mediterranean fruit-fly, an insect now present in North Africa, in Spain, in France, in Sicily, in South Africa, Australia, the Azores, Brazil, Hawaii, Bermuda and other parts of the world? An insect so general in its attacks that it infests egg plants, peppers, tomatoes, pumpkins, beans, oranges, grapefruit, lemons, limes, kumquats, figs, peaches, plums, mangoes, pineapples, loquats, avocados and guavas. In fact, it is very nearly, if not quite, true that it infests every fruit in which we are interested. In Spain, it is a safe rule to eat no fruit in the dark. Pick up a luscious peach or fig, beautiful outside, inside a putrid mass of maggots. And one box of Sicily lemons landed in Tampa or Key West might infest the whole State. Yes, even one infested fruit of any kind. That you may know this is no visionary statement let it be pointed out that Bermuda was infested by fruit shipped from the Mediterranean to New York. Owing to a storm the vessel was driven to the Bermuda Islands, where the cargo was unloaded. Every fruit

crop in Bermuda has been infested since, and that was many years ago. Again this insect was introduced into Australia in oranges from Italy. It is regarded as one of the most serious pests in every country where it is established. Its control is absolutely a hopeless undertaking, and judging from the way in which it is distributed it is able to establish itself and to work untold harm not only in Florida, but throughout the whole Southeastern States.

Do we want the red scale of Spain? An insect which we have not and which is able to live on so many broad leaved evergreens that its control in this State would be a matter of extreme difficulty. In Spain orchards infested are in a most serious condition.

Would we like the Morelos orange fruit worm or Mexican orange maggot? If we would there are plenty of them in Mexico.

Do we want the Mango Weevil? It is in Hawaii and other countries, and it is quite capable of making the journey to Florida if given the chance to come in.

Do we want the sugar cane borer or the Argentine ant? They are already established in Louisiana, and we can easily have them with us.

We probably got the San Jose scale from Japan. There are a few more insects there that are able to add greatly to our present insect troubles.

This enumeration of insect pests which may easily find their way into Florida might be greatly extended. Even in California and other States there are some we do not want, but enough has been said to emphasize the danger to

which we are exposed under the new conditions of trade.

Nonsense, some one will say, these insects are so far away, these countries are so remote, it is not worth while troubling about these things. But do not forget that this old world is growing smaller and smaller every day. It took seventy days for Columbus to make his memorable voyage in 1492, but now you can walk down Bay street, in Jacksonville, and nine days later stand by his tomb in the cathedral at Seville, Spain. No, no, these places are not remote, and they are coming closer every day.

Why are these insects not here? The avenues of travel have been indirect and the traffic has acted as somewhat of a barrier, and Providence has been kind, but at the same time enough have arrived through one channel or another to make us shudder at the thought of more.

But the time has come for us to act swiftly and forcefully. It will not do to sit idly by with folded hands and accept what may come to us. "Providence helps only those who help themselves." As a rule, insects are not eradicated after they are introduced, and it is easier to prevent their entrance than to attempt their eradication or pay their perennial toll. Get up and act.

Before the Legislature there is now

pending the crop pest bill of this Society. Have you any influence? Use it. It is your duty for the interest of the State. Do not let this session of the Legislature adjourn without making this bill a law. Our Legislators are in sympathy with us if we let them know our will.

DISCUSSION.

Mr. Griffing: We have just listened to the most interesting and instructing address of our President, and it is well worth the trip to DeLand just to have heard that alone. You will notice in this report he calls attention to these dangers which confront us, and he offers a suggestion that members of this Society act, and appeal to our Legislature, and to our Representatives in Congress. Therefore, I deem it wise to make a motion that the Secretary of the Society be instructed to appoint a committee of three to consider our President's address and suggest resolutions to be acted upon by the Society as they may think expedient. I offer this as a motion for the Society..

Motion seconded and carried, and the Secretary appointed as the committee C. M. Griffin, Jacksonville; G. M. Wakerlin, Tavares; T. R. Robinson, Terra Ceia.

Introduction of the Question Box

E. O. Painter, Secretary.

Mr. President, Ladies and Gentlemen:

Sometimes the box has been too small to contain all the questions asked. So this time I prepared one capable of holding all the questions.

Please bear in mind that any one who wishes to ask a question on an agricultural topic can do so. We know there are a good many farmers and horticulturists who are not able to get up and give their experiences before an audience. If any one wants to ask a question on the floor, he has that privilege, or if he has stage fright so bad he can't talk at all before an audience, he can drop the written question in the box. The questions may be answered from the floor; if not, an effort will be made to answer them in the proceedings. You are all welcome to patronize the box with whatever questions may be of general interest.

Sometimes things happen that are not laid down in the program. It may be a little out of order, but I am now going to take a little privilege as Secretary.

I have been a member of this Society ever since it was organized; in fact, looking at the list, I find there are only two other charter members alive today—Mr. Gaitskill and Mr. Hart—besides myself. So far, I am the only representative here of that number.

Under ordinary circumstances I would

not have said anything, but we are coming here to my home town—the place where I came nearly thirty-seven years ago. As I look over this audience I see many familiar faces; faces that I used to know in knee dresses—why not in knee dresses? They used to run around in knee dresses before they got them longer.

Mr. Connor: No boys in that crowd?

Mr. Painter: I have not finished yet. Shall I say, the boys in knee skirts? Some of the grown men I see here I have seen in knee skirts. The boys and girls of my early days I now see around here with gray hair; some of them are in my own head—the gray hairs, I mean. (Laughter.)

I have always stood up for DeLand as one of the best places in the whole State of Florida: They say it is a poor crow that won't croak for its own nest. I am glad to stand before you tonight and say that in all the twenty-five annual meetings of the Horticultural Society I have never seen as fine and large and enthusiastic gathering at the opening meeting, as is here tonight. Therefore, my heart is proud of the Horticultural Society, and it is proud that I have had a part in making it as it is. When we go back twenty-five years—it doesn't seem long to look back over that length of time,

but looking ahead it seems a long, long time.

If anyone had told me when I first came here that I would stand on this rostrum at this time, I would have thought that they were crazy, because when I first came here I concluded I would stay just long enough to get away, but the longer I stayed the better I liked it. After I stayed three years I left, and shook the dust off my feet, but it was

only three months before I came back and shook it on again.

I am glad to be here and welcome the Horticultural Society to my home town, and I want to say to the people of DeLand that I am proud of you for the reception you have given us. As I said before, I want to repeat, I am proud of the Horticultural Society, and I am proud of DeLand and the people in it. (Applause.)

Citrus Fruit Handling and Storage

A. W. McKay

ASSISTANT IN FRUIT TRANSPORTATION AND STORAGE INVESTIGATIONS
U. S. DEPARTMENT OF AGRICULTURE.

The citrus fruit handling and transportation investigations of the Bureau of Plant Industry were begun in Florida in 1906 and continued until the season of 1911-1912. The results of this work have been presented to the members of this Society at various annual meetings by Messrs. Tenny, Stubenrauch and Ramsey, and the majority of you are doubtless familiar with what has been accomplished. At the end of last year it was felt that six consecutive seasons of experimental work had demonstrated thoroughly the causes of blue mold decay in Florida oranges, in transit and on the market, and the value of careful handling in preventing such decay. If any further demonstration was needed, or is needed, it is furnished on a commercial scale by an increasingly large number of growers and shippers of citrus fruit who have adopted careful handling methods. There are now packing houses in the State whose records are conclusive evidence that it is not only possible but practicable, to handle oranges and grapefruit so that they will arrive on the market with little or no decay, even under the most unfavorable weather conditions.

The work of the office of Field Inves-

tigation in Pomelos in Florida, this season, has related more directly to another phase of the fruit handling problem. Last October, in co-operation with the Cocoanut Grove Citrus Growers' Association, and with Mr. Temple, at Winter Park, an investigation of the factors relating to grapefruit storage was begun. The object of these experiments has been to determine whether or not it is feasible to extend the marketing period and equalize the distribution of Florida grapefruit by holding the fruit in storage for some time before shipment. The work has been carried on throughout the entire season, and there is still a considerable quantity of grapefruit in storage at both Winter Park and Cocoanut Grove. This will be held for at least one or two months' longer.

As a further extension of the fruit handling investigations in this State, a preliminary study of pineapple handling and transportation will be begun at Fort Pierce in a few weeks. These experiments will include some fundamental work on the effect of different types of handling on pineapples picked at different stages of maturity—green, just coloring, and fully plant-ripened. The question of shipping pineapples under refrigeration

will also be taken up to some extent, and it is quite probable that the work will include careful experiments on the desirability of pre-cooling pineapples.

BLUE MOLD DECAY OF FLORIDA ORANGES
DURING 1912-1913.

Though the experimental work on orange handling was concluded a year ago, the excessive decay in Florida oranges this season makes a brief review of the situation not out of place. Before taking up the question of grapefruit storage therefore, I wish to devote a few minutes to a discussion of the conditions which seem, in the light of the experimental work of past seasons, to be responsible for the trouble. No extensive experiments have been made with this season's fruit, but a year ago, as you remember, there was a similar period of high decay lasting for about eight weeks. Several experimental shipments, including both carefully and commercially handled oranges, were made at that time. This year Mr. Ramsey made a trip to Florida about February 1st at the request of the Florida Citrus Exchange, and visited several of the orange growing sections. From Mr. Ramsey's observations and from experiments covering the six previous seasons, the only conclusion that seems possible is that the decay must be due to han-

dling methods and to weather conditions ideal for the development of the blue mold fungus.

This has been an unusual season in so far as weather conditions are concerned. It has been unusual also in that Florida has shipped the largest crop of oranges and grapefruit in the history of the State. To the combination of these two factors the high percentage of blue mold decay can be directly traced. There was, first, an unusually large crop, which meant crowding the packing houses beyond their capacity, and which consequently resulted in a let-down in care in both field handling and packing house operations, followed by a high percentage of injury to the fruit; secondly, temperature and humidity throughout the greater part of the shipping season were relatively high. One factor furnished the soil blue mold spores require, and the other the most favorable conditions for their germination and development. The decay that followed will appear again every time the same conditions arise.

Just how unfavorable the weather conditions were during the shipping season can be plainly seen from the accompanying table. The data given are for the section around Miami, but they are an indication, at least, of what the conditions were in other parts of the State.

TABLE I.

NUMBER OF DAYS EACH MONTH, FROM NOVEMBER 1ST TO MARCH 31ST, ON WHICH THERE WAS A RAINFALL OF 0.1 INCH OR MORE.

MIAMI, FLA., 1898-1913.

SEASON	'98 '99	'99 '00	'00 '01	'01 .02	'02 '03	'03 '04	'04 '05	'05 '06	'06 '07	'07 '08	'08 '09	'09 '10	'10 '11	'11 '12	'12 '13	
November	---	2	3	—	—	5	3	8	9	5	7	3	1	1	18	7
December	---	3	5	—	3	1	0	2	7	0	4	3	1	1	11	7
January	---	6	6	—	0	7	2	2	7	2	8	9	3	2	16	11
February	---	4	4	0	2	4	2	2	6	1	3	0	1	0	6	7
March	---	3	6	3	0	7	4	3	5	2	4	3	2	4	11	14
Totals	---	18	24	3a	3b	24	11	17	34	10	26	18	8	8	62	46

(a). February and March only. (b). November not included. Average number of days per month with one-tenth inch or more rainfall for above period, 4.4.

We may speak of weather conditions, and the fact that blue mold spores are always present in the atmosphere, as causes of decay, but the extent to which these factors can be controlled is limited. Fortunately, however, there is one preventable cause, which, in so far as the grower and shipper of citrus fruit are concerned, is the primary cause. This is the injury done to the fruit in the handling operations from the tree to the car. *Blue mold has not the power to penetrate the sound, healthy skin of citrus fruit.* This fundamental fact has been stated and demonstrated many times, but it needs to be repeated until it is part of the creed of every man engaged in handling the fruit. Conversely, injured fruit is almost certain to develop blue mold under high temperature and moisture conditions.

The wonderful improvement in packing house equipment and handling meth-

ods during the past three or four years has eliminated to a large extent the injury formerly done by crude and antique machinery. Improvement in field handling has also been great, but it is a fact, nevertheless, that it has not kept pace with that in the packing house, and in some instances has been so poor as to entirely nullify any benefits that might be expected from improved and expensive house equipment. The very best equipment and management can not prevent the decay of fruit already injured in the field, and it is in the field, I think, that most of the trouble during the season just past had its origin.

I regret very much that I have not available the data on field handling which Mr. Ramsey obtained this year. However, these figures show surprisingly poor work, even among the picking crews of the most up-to-date houses. In some cases the percentage of injury and

of long stems ran as high as 85 per cent. of the fruit picked. This includes only visible injury, and oranges picked with stems long enough to injure other fruits, either in the picking boxes or while going through the washers and sizers. It was found also that a great deal of harm was being done by dropping the fruit into picking sacks and field boxes. Mr. Tenny, when he had charge of the Florida work, made several experiments on the injury caused by dropping otherwise sound fruit a distance of from one foot to twenty inches. He found that on the average, 20 per cent. decay developed in this fruit after it had been held for two weeks in the packing houses, and I have seen instances where 60 per cent. decay developed from this cause alone. It is reasonable to suppose that the fruit this season was particularly susceptible to this type of injury, since it was grown under conditions favorable to rapid growth, and was very heavy and juicy. More attention should be paid to eliminating unnecessary dropping of the fruit both in the field and packing house. Most picking foremen and pickers realize now the damage caused by clipper cuts and long stems, but there are many who do not know that as much or more decay may be caused by dropping the fruit from one to two feet. This point is especially important because it is always the weakest point in field handling. It is the first place where lack of care shows. If a picker is rushed, or careless, he at once begins to begrudge the extra moment it takes to empty a sack of fruit carefully, and if not closely watched it is not long before he, and the rest of the crew as well, are pouring the

fruit from their sacks in the approximate direction of the field boxes. There is no place where a bad example is more quickly followed than in a picking crew.

When there is an unusually large crop, or when shipments are unusually heavy, as happens in the annual rush for the Christmas market, it invariably follows that much less care is taken in handling the fruit. This has been found to hold true in citrus fruit handling in both Florida and California. It has held true again this season. There are, of course, individual exceptions to this general rule, and it is encouraging to note that there were some conspicuous exceptions in Florida this year. The packing houses which made a record under this season's trying conditions handled different types of fruit, grown on different types of soil. They used different types of packing house equipment, but there was one factor which was common to all of them—*they were all getting consistently careful work in the field.*

There are two packing houses located about a hundred miles apart which can be taken as examples of the conspicuous exceptions I have mentioned. The first has held for the past four seasons the enviable distinction of having the best picking crew in the State. Inspections of picking crews covering practically all orange and grapefruit sections have shown the work done by the crew supplying this house to be unquestionably the best. This house has shipped oranges throughout the entire season with no cars showing heavy decay, and only a very few showing even a slight amount. By far the greater part of their ship-

ments arrived on the market with absolutely no decay at a time when, in shipments from other houses, 20 per cent. was the rule rather than the exception.

The second house has not been one of the leaders until this year. Its record at the beginning of the present season was not the best. This apparently put the management on its mettle, and a consistent and successful attempt was made to improve conditions. During the period of heaviest decay this house shipped car after car of fruit under ventilation and had it arrive on the market in sound condition. At the same time, other packing houses having equally good equipment and handling equally good fruit, were getting returns showing from 10 to 30 per cent. decay. When I visited this house the first of March, I found one of the best organized and managed picking crews in the State. There is no doubt that the secret of their success lay right there. This, of course, does not discount the value of careful and efficient management in the packing house.

In 1911 the Bureau of Plant Industry was called upon to investigate heavy decay in California oranges arising under conditions similar to what have been experienced in Florida this season. That is, there was an unusually large crop of fruit, resulting in over-crowding the picking crews and packing houses; and warm, rainy weather prevailed during the shipping season. Work on orange handling had been carried on in California previous to this, having been concluded in 1908. A large number of supplementary experiments were made in 1911, and it was found, as has been

demonstrated in the Florida work, that *carefully handled, uninjured fruit kept in sound condition under the most adverse weather conditions*. It was also found that in the rush to get the fruit on the market there had been a serious let-down in care in handling. The conditions in Florida this season seem to me almost an exact duplicate of those in California in 1911.

In summing up the results of this California work in a circular of the Bureau of Plant Industry, Mr. Stubenrauch said: "The industry must always be prepared to meet the exceptional and the unusual." The Florida citrus industry this season has had to contend with exceptional and unusual conditions, and in most cases has tried to meet them with the usual, or a little poorer than the usual, methods. We cannot tell when such conditions will arise again, but they will arise sooner or later. I believe the remedy lies in recognizing what these conditions mean, and in exercising *exceptional* care in all handling operations. If necessary, cut down the output of your packing house one-half during a period of high decay, but see that every orange you ship is handled carefully all the way from the tree to the car. Unless absolutely necessary, and unless thorough drying can be obtained, it is advisable not to wash fruit during warm, humid weather.

There is abundant evidence in support of the statement that carefully handled uninjured fruit will keep under the most unfavorable conditions. It has been demonstrated by repeated experiments in both Florida and California, on thousands of boxes of fruit from all the orange grow-

ing sections of both States. But even more convincing and encouraging is the fact that packing houses in Florida, as well as in California, have been able to handle oranges carefully on a commercial scale, so that no matter what the weather or other conditions may be, their packs will arrive on the market sound.

GRAPEFRUIT STORAGE.

The grapefruit storage investigations which were begun this season include a study of the keeping quality of fruit picked at different stages of maturity, of the conditions best adapted to the long storage of grapefruit, and of the changes which occur in the fruit itself during the storage period. For the purpose of securing a uniform grade of fruit for the experiments, a block of trees, as nearly as possible representative of the average grapefruit groves in each section, was selected at both Winter Park and Cocoanut Grove. The fruit for storage was picked once a month from these trees. In both places insulated storage rooms were constructed and equipped with ventilators, which were opened at night and closed early in the morning. Part of the fruit is stored in these rooms, and part in storage tents such as are used in California for holding lemons. Hygrometer records of the temperature and humidity are obtained in the storage rooms and tents, and for the outside air. The fruit is inspected each month, the amount of decay and shrinkage noted, and a record made of the color, condition (i. e., firmness) and texture of each individual grapefruit.

The results of one year's work can only be taken as a general indication of what it will be possible to accomplish. Although the results this season are, on the whole, encouraging, the question of grapefruit storage is still strictly in the experimental stage, and it is impossible to say at this time to what extent it will be practicable commercially.

The experiments at Winter Park were not begun until February, so a complete season's record is not available for that section. At Cocoanut Grove, however, the first lot of fruit was picked November 8th, and similar lots were picked in December, January, February and March, covering practically the entire shipping season. I shall confine myself, therefore, for the most part to an outline of the work conducted at Cocoanut Grove.

STORAGE CONDITIONS.

The storage room at Cocoanut Grove was built in the basement of the Association packing house. It was constructed with double walls, with a four-inch dead air space between them, double doors and double ventilating shutters. These shutters are opened about 8 o'clock at night, and closed at 4 in the morning. The storage tent is also in the basement of the packing house.

Table II presents temperature and moisture conditions in the storage room and outside air for one week, ending December 29th, 1912. This is typical of the records obtained throughout the season.

TABLE II.

TEMPERATURE AND HUMIDITY RECORD FOR WEEK ENDING DECEMBER 29TH, 1912.
COCOANUT GROVE, FLA.

	Outside Air.				Storage Room.			
	Temperature (F.)		Humidity %.		Temperature (F.)		Humidity %.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
Monday -----	82	71	100	83	75	71	84	79
Tuesday -----	84	70	100	73	70	71	84	80
Wednesday --	79	68	96	84	74	71	83	80
Thursday ---	83	68	100	79	74	69	84	79
Friday -----	85	62	90	71	74	67	84	76
Saturday -----	74	57	88	69	68	63	80	71
Sunday -----	80	71	98	76	72	68	85	72

Conditions in the storage room are decidedly more uniform than in the tent, and conditions in the tent are in turn more uniform than in the outside air. Those in the storage room though not the best, by any means, are probably as good as can be expected in this climate with natural cooling. The humidity is still too variable and the temperature too high, however, and it is evident that for the best results these conditions will have to be modified and improved.

CONDITION AND QUALITY OF STORED GRAPEFRUIT.

Part of the fruit in both the tent and storage room was stored wrapped, and part unwrapped. Several boxes in each lot of wrapped and unwrapped fruit in the storage room were washed before storage; the remainder were stored without washing. All the fruit held in the tent was washed. Some striking differences in condition were found between grapefruit stored wrapped and unwrapped, washed and not washed, and be-

tween fruit in the storage room and that stored in the tent. Tables III. and IV. show how great those differences were. The term "good commercial condition" used in this connection designates fruit that changed very little in color and firmness while in storage. This fruit would not be discounted on the market. What falls outside of this class is not unsalable by any means, but would have to be shipped under the third grade.

TABLE III.
WRAPPED VS. UNWRAPPED GRAPEFRUIT.
PER CENT. IN "GOOD COMMERCIAL CONDITION," AFTER ONE TO FIVE MONTHS IN STORAGE.

Length of Time in Storage	Held in Storage Room		Held in Stor. Tent	
	Wrapped	Unwrapped	Wrapped	Unwrapped
1 month	99.8	98.1	99.2	70.5
2 months	98.3	91.8	85.2	22.0
3 months	87.8	50.3	27.5	0.8
4 months	79.2	28.0		
5 months	66.4	18.3		

At the end of the first month of storage there was very little difference in condition between the wrapped and unwrapped fruit held in the storage room. At the end of two months, however, the difference was marked, and at the end of five months the percentage of wrapped fruit in good commercial condition was over three and one-half times as great as the percentage of unwrapped fruit. The difference in favor of wrapping is even greater in the fruit stored in the tent. However, the impracticability of holding grapefruit, either wrapped or unwrapped, for any length of time under tent conditions is shown by the table clearly enough to require no further comment.

TABLE IV.

WASHED VS. NOT WASHED GRAPEFRUIT.

HELD IN STORAGE ROOM, PER CENT.
IN "GOOD COMMERCIAL CONDITION"
AFTER ONE TO FIVE MONTHS'
STORAGE.

Length of Time in Storage	WRAPPED		UNWRAPPED	
	Not Washed	Washed	Not Washed	Washed
1 month-----	99.8	100.0	98.1	99.8
2 months-----	98.3	100.0	91.8	98.9
3 months-----	87.8	98.5	50.3	78.1
4 months-----	79.2	96.6	28.0	68.1
5 months-----	66.4	81.0	18.3	

Grapefruit stored wrapped and not washed has kept in the best condition in all the experiments.

The difference between washed and not washed fruit in storage was surprising. Although handling experiments have demonstrated that fruit not washed is

less subject to decay than that washed, it was not thought that washing would have any effect on the firmness of the fruit after a period in storage. The difference, however, was almost as striking as that between the wrapped and unwrapped fruit. Table IV. shows that after three months and longer in storage, from 11 to 40 per cent. more of the not washed fruit than of the washed, was in good commercial condition. The results shown in both of these tables are an average of the results of all the experiments carried on at Cocoanut Grove this season.

The quality of grapefruit is undoubtedly improved by storage. Analyses of specimens from the different lots, made by the Department of Chemistry of the Florida Experiment Station, show that the citric acid remained practically constant, but that there was a fairly consistent increase in total sugar content. This increase in sugar is 1-1-2 per cent. in the fruit picked in November, after four months in storage, and 1 per cent. in the January fruit after two months in storage. However, the superior quality of the stored fruit can hardly be expressed chemically. Its chief attraction is a mellowness of flavor which makes it even more desirable than the fresh fruit.

Although it has been found possible to hold grapefruit for four months in common storage with over 96 per cent. of it in good commercial condition, there are two factors that must be overcome before it will be advisable to attempt commercial storage. These are high shrinkage and decay. Shrinkage, that is, loss in weight aside from decay, has averaged

from 3 to 6 per cent. a month. It is greatest in the riper fruit, and under the dry conditions which have obtained during most of April. The decay has also increased progressively, and in the grapefruit picked in February and March has been very high. Practically none of this decay has been blue mold, and no stem-end rot has developed except in a few lots of melanosed fruit. The trouble at Cocoanut Grove was caused by a brown decay which I have never seen before on citrus fruit. Several specimens have been sent to the mycologist of the Bureau of Plant Industry, and some information on the subject will be forthcoming before another season's work is begun. This decay spreads very rapidly by contact; an experiment made at Cocoanut Grove indicates that it may be possible to control it by dipping the fruit in a copper sulphate solution. I am of the opinion, however, that it will not develop at a reasonably low temperature, as very little of it appeared the early part of the season, or in the fruit picked in November, December and January. It seems to be essential that some method be devised to cool the storage rooms to a temperature at least as low as 60 degrees, F.

This has been done at Winter Park for the past month. The storage room there is equipped with an overhead ice room, which will hold several hundred pounds of ice. The fruit in the room is cooled by the gravity circulation of the air chilled by the ice above. This room will hold practically a car of packed fruit, but there are probably not over fifty boxes in it at present. To keep a room of that size and with that quantity

of fruit in the neighborhood of 60 degrees, F., requires the meltage of about 100 pounds of ice each twenty-four hours. This amount, of course, will vary greatly under different conditions. As the fruit in storage at Winter Park has only been held for one month under this lower temperature, it is impossible to say now whether or not this method is of marked benefit.

COMPARISON OF GRAPEFRUIT PICKED AT DIFFERENT STAGES OF MATURITY.

Except for decay, there seems to be little difference in the condition of fruit picked in February and March, as compared with that picked in November and December. The later fruit, of course, has not had as severe a storage test as that picked earlier. At present its condition is slightly poorer than that of the early fruit after a similar period in storage. Part of this is probably due to the somewhat higher temperatures during the last two months, and to the lower humidity during most of the present month. There are two factors with regard to time of picking that will have to be taken into consideration, if grapefruit storage becomes a commercial practice. The first is the time when the fruit is in the best condition for long storage; the second is the desirability of picking it when it has reached a marketable size. A grower trying to hold grapefruit for a June or July market would naturally keep it on the trees as long as possible. It may be that it will be found advisable to pick the fruit a month or two before the extreme limit to which it can be held on the trees, in order to get the most de-

sirable sizes; and it may possibly be found that the fruit picked earlier will keep over the longer holding period better than the later fruit can be held for a shorter period.

One season's work can be taken as little more than indicative of the factors which should be considered in planning future work. The experiments will have to be continued at least two more seasons before any definite conclusions can be drawn. We hope, with a continuance of the splendid co-operation given us by Mr. Temple and the Cocoanut Grove Association, to be able to work out the problem to a satisfactory conclusion. The experiments next year will include grapefruit held in storage rooms cooled, either by ice or by artificial refrigeration, to a temperature as low as 60 degrees, F. It will be possible to maintain more constant and satisfactory humidity in rooms cooled in this way. Special emphasis will be laid on this phase of the work, and at the same time the value of certain packing materials, such as cork and sawdust, will be tested. It is hoped that some feasible and practical means will be found of holding Florida grapefruit at least through May, June and July. These three months added to the present marketing period would materially increase the amount of fruit which could be profitably marketed, and the judicious storage of grapefruit should also be of advantage in holding the market steady throughout the season. It is the opinion of the trade that there would be an active demand for Florida grapefruit at least until the last of July, and I have no doubt that when the supply is forthcom-

ing the consumer will demand grapefruit every month of the year.

DISCUSSION.

Mr. McKay: I have here some specimens of fruit from the storage at Cocoanut Grove. This one was picked November 8th, 1912, and held under common storage. This was picked December 20th, 1912, and held in storage until I came over here. This one was put up wrapped without washing, and this one washed and wrapped. Both were held in the storage.

Mr. Bond: I experimented a little in storage myself in 1893. I shipped something like fifty or seventy-five boxes of oranges to Cleveland, Ohio. As I recollect it now, they were picked about the first of March. They were mixed varieties; I don't remember exactly the varieties. I shipped them to Cleveland and had them put in storage. Later, I went North and went to the storage house and there saw two or three barrels of grapefruit that some one had sent there for their own use—not to sell. I saw the condition they were in, and was told they had been in there about thirty or forty days. My own oranges were perfectly sound. I took them out and sold them to Cleveland people in the month of July. They were packed in boxes and unwrapped and unwashed—we knew nothing about washing them in those days. I think a little of it was done by Mr. Stetson.

My recollection is that my oranges were not wrapped or washed. The result

of it was the oranges were perfectly sound. The thermometer was kept in the region of about 40 degrees, so the proprietor stated.

I sold them in different lots, and one man to whom I had sold ten boxes at \$4.50 a box, told me that they went down so rapidly you could almost see it. I did not guarantee the oranges, but there was so much complaint that I had to refund almost all the money I received for them. They wouldn't stand any time at all. Those who took one, two or three boxes for immediate consumption, I did not hear anything from. I myself took three or four boxes, and we managed to eat them up, though a good many spoiled before we could eat them all up.

We all realize the benefit if we can extend the time, as has been suggested. The only difficulty if they have been in cold storage—and they can be kept there in perfect condition—is to keep them from going down immediately after they are taken out. They will have to be put into a car of practically the same temperature and be used soon after their arrival at the market. At least, that was the result of my experience. You may have learned something since then. This grapefruit looks as though it could be used.

Mr. McKay: I think the gentleman who has just spoken has somewhat misunderstood. We do not propose to hold grapefruit under cold storage. That is an entirely different problem from what we are trying to get at. What we propose to do is to maintain an even, cool temperature, possibly not lower than sixty degrees. The grapefruit you see have

been held at a temperature not much lower than seventy degrees, and frequently as high as seventy-five. I think the line on the chart shows the temperature to have been as high as seventy-five and as low as sixty-three degrees. Our idea in using artificial cooling is to keep it as low as sixty degrees.

Dr. O. W. Sadler: I have been making a study of this moisture and decay and experimenting a little, too. We have the white fly with us, and consequently have to wash the fruit. I don't know how we can stop it, under present conditions. My observation in the few years past is that under the washing process, there has been no adequate means taken for drying the fruit after it has been washed. I have been in several packing houses this year where they were putting up as fine, clean fruit as could be, but so damp that it wet the paper it was wrapped in, the weather being cold and damp.

Mr. McKay made a remark that if the fruit is kept dry it will not develop blue mold. It is a demonstrated fact that blue mold will form only where there is moisture. If the fruit is packed when it is moist and shut up in a box tightly so that the moisture is retained, that moisture is going to stay there until the fruit is sold and opened up in the retail stores. In that way, we put ourselves in a condition inviting decay as perfectly as we can do it.

We have had six years of experiments by experts in picking the fruit carefully, and we are supposed to be sensible enough to avail ourselves of the information

gained. We must be ignoramuses indeed if we cannot gain by the benefit of six years' experience, yet we have had excessive decay from blue mold this season.

I have already said that the fruit is not put up dry in the great majority of cases. If I am wrong, I will be glad to have some one correct me. The very best packing houses which had the best reputation last year were putting up fruit wet enough to wet the papers.

I took this matter up with Professor Rolfs by letter. He could not answer all the questions involved to his satisfaction, so he took it up with some one else. He again could not answer it satisfactorily to himself, so he sent it to another—the professor of physics.

Right here, I want to call your attention to this fact: Our packing houses today are run by mechanical dryers. They are run by men who have made a study of mechanics, ignoring the laws of physics. You know that the use of mechanics means force, and force, with oranges, means injury—and decay.

I want to say further, that clipper cuts and injuries of that kind have been considered the sure cause of rot. I tried a little experiment with that, too. After all the good fruit was shipped this year, I went through the grove and found a few culls. I took the best of them and the worst of them and made big clipper cuts, as big as my thumb nail; then I took the long stem and pricked the rind in several places, after washing the fruit. To make sure it was dry, I put it in the oven for fifteen minutes where the wo-

man was ironing. It got so hot I could not handle it well. Then I wrapped it tight in wrapping paper and packed it up as tight as I could in one of the fruit jar paper cartons, and put newspaper all over the cracks, shut it down tight and put the package away with the fruit still warm.

I left it there eleven days. That is about the length of time it takes to get to Philadelphia or Chicago. Then I opened it up. There was not a single clipper cut or injured spot decayed. Some of the spots where I had baked it, had not decayed, either, much to my surprise. The baked part of the rind had sunk down and was as thin as tissue paper, but it had not blue mold decay. Of course it would not stand the pressure of shipping.

Some of the grapefruit I put in there were culls, and most of the grapefruits were decayed, but none of the injured spots—I had thoroughly dried the injured.

The point is, if we can dry the fruit thoroughly, we can prevent the decay that otherwise would take place.

I think we have been led astray by the adoption in Florida of too many California methods. California is so different from Florida. You don't find the moist atmosphere in California. Their physical geography is no more different than the climatic conditions under which their fruit is raised. You don't find mountains in Florida, as in California, in sight of their orange groves. They can easily pre-cool their fruit, because they

do not have the same degree of moisture we have here.

The point of my whole talk is, to impress upon you the importance of *thoroughly drying* your fruit before packing it. Just apply the commonest law of physics. You have a cool orange in a warm room; it will attract moisture just as long as it is cooler than the atmosphere. Now, then, if we pre-cool our fruit to the dew point, we invite moisture. If we put it up dry and put ice in the cars with it, we cool the fruit down to such a point that it will attract moisture from the warmer air outside and will "sweat." If we *dry* our fruit instead of pre-cooling it, we will not need ice. In fact, the car that we shipped under ice this season, showed more decay than any other car, shipped without ice.

Failure to dry fruit properly in cold, damp or foggy weather by the methods generally in vogue: On suggestion of O. W. Sadler, Jr., as I have said, I took up the question of the efficiency of heat in evaporating water, and the necessary rapidity of movement of the heated air in drying fruit, with the University of Gainesville.

J. R. Benton, Professor of Physics and Electrical Engineering, made the following reply: "It is not difficult to compute how much moisture could be taken up by air at any specified temperature. The best effect would probably be produced by having the air as hot as the fruit would stand.

As an illustration of the story of figures that could be obtained let it be supposed that you start with air at 68 de-

grees F., completely saturated with moisture; heat this air to 200 degrees F., then let it pass over the fruit and leave the fruit at 86 degrees F. Then one cubic foot of air should carry with it .36 grains of water. Just how much moisture sticks to one orange, I do not know. As a pure guess, I should say about one gram (15 grains), so that approximately three cubic feet of air under the conditions specified would be required for each orange. The amount of heat necessary to warm the air as specified above amounts to 554 calories for each cubic foot, and this would require the burning of .2 of a gram of wood, so that one pound of wood should be enough to heat about 2,000 cubic feet of air if no heat was lost, and should probably be sufficient to dry about 700 oranges.

These computations make no allowance for practical difficulties and imperfections, but represent the best that can be obtainable under ideal conditions."

By what means, then, shall we get the greatest efficiency in thoroughly drying fruit by heat?

In my opinion, there can be no more efficient method than by steam confined in pipes, run close under the rolls carrying the fruit in the drying box. In this way, the heat would be absolutely under control as to quantity and temperature. A little experimenting in each plant or packing house would soon determine the temperature required for the capacity and speed of the drying box. When this is determined, a thermostat would control that amount automatically, whether the drying rack traveled slow or fast, or not

at all, and avoid any danger of "cooking" the fruit, so feared by some.

As per Professor Benton's figures, 200 degrees F. heat would be reduced to 86 degrees F. by the evaporation of the water, so it would be perfectly safe to maintain the heat of the steam in the pipes high enough to secure 120 degrees F. to 135 degrees F. in the drying box, if not more, safely, just short of cooking or scalding.

It would only be necessary to change the air in the drying box after it had taken up all the moisture it would hold at the heat maintained.

The surface of a sphere equals four times the area of a circle of the same diameter. A fruit 4 inches in diameter—8c size—would have 50.26 inches area.

Allowing three feet of air per orange, and an average of 150 oranges per box, and 600 boxes per day, a draft vent 2 feet square would require a draft speed of air of 1.87 linear feet per second, equivalent to the speed of one-quarter mile per hour. Hence, we see the absolute absurdity of forcing heated air over the fruit with a fan at the speed that is done in most cases, under present methods.

The failure of the present method arises from the fact that the air on cold, damp or foggy days is already near the point of saturation, and can take up no more from the fruit, no matter how much is passed over it. Where they use the exhaust heat from engine, or from hot air furnaces, as some do, the heat is so infinitesimal in proportion to the

moist air forced through by the fan, it amounts to practically nothing.

From six years of practical experience, it has been thoroughly proved that it is *impossible* to avoid *all* injuries from tree to packing house.

It is also proved by experiment that if all injuries can be dried, free of moisture, blue mold cannot develop.

Therefore, it is my contention that by the use of heat always under full control, we can prevent very much of the decay caused by injuries we can not prevent, and save the growers thousands upon thousands of dollars by primarily preventing decay, and thousands more by saving them from ice bills that cost 15 cents per box.

This being true, is it not criminal negligence to continue the present inefficient means used in *trying* to dry fruit?

Our motto at Mount Dora is, "We will pack no fruit that is damp. I have carried fruit in my office in the North in May and had it lay until October, because I kept it dry.

Mr. Rolfs: I would like to speak in regard to the analyses of the grapefruit Mr. McKay told us about: The results of the chemical analyses. We should not leave the hall here and generalize on that, because the number of analyses on that were not sufficient to form any general statement in regard to it. The analyses indicated exactly as stated by Professor McKay, but at the same time let us not generalize and say that grapefruit will increase in sugar content as we hold it. Wait until we do some more work along this line before we make a definite state-

ment. We have not yet obtained sufficient data to make a general statement, but the professor is correct so far as the analyses we have made, have gone.

Mr. McKay: That is a very good point, and I intended to make it clear. The statements made were the result of the few analyses we have made but not enough have been made to enable us to state that it is a definite fact.

Mr. Hubbard: I would like to ask Mr. McKay what percentage of natural shrinkage was sustained by the fruit that was stored.

Mr. McKay: I should say during November and December it was not more than 2 or 3 per cent. However, last month the conditions were such that it ran up as high as 6 per cent. The average has been as much as 3 or 4 per cent. a month. The total percentage of the shrinkage of fruit held five months would be about 14 or 15 per cent.

Mr. Hubbard: That coincides with an experiment I made in shipping oranges to England. The oranges were gathered the 15th of October and shipped to my son, and kept in cold storage at Southampton. They were sold the first part of March, and the shrinkage was about the percentage you mention.

Mr. Thompson: I would like to ask in regard to the clipping of the fruit; what kind of clippers; I mean what make is found to give the best results generally over the State.

Mr. McKay: I cannot recommend any particular make of clippers; you want one that does not get out of order easily, with round points, not apt to puncture the fruit, and one that can be used with

safety and give good satisfaction. (Laughter.)

Mr. Thompson: I do not ask you to give any particular name. I would like to know if different classes of clippers were used in that work.

Mr. McKay: Two or three different kinds. One or two of the better kinds.

Mr. Thompson: I know that is very important. I try to get the best clippers I can find, and yet we have poor enough work. I have not yet found a good clipper, or, rather, I should say perhaps in good hands.

Mr. McKay: It is not the clipper so much as the man in charge of the crew. If you have good men with good clippers, kept in good condition, you are pretty apt to get good work.

Mr. Skinner: I would like to know if the Government thinks enough of this to continue the experiments; I mean, the grapefruit storage.

Mr. McKay: They think enough of it to carry it on one more season.

Mr. Skinner: I think the thanks of the Society are due this department, and especially the man who negotiated this work. I have known about it and watched with a great deal of appreciation the work that is being done. I was greatly pleased, but not surprised, that Mr. Temple, who had already given the department the use of his groves, should go to work and out of his own pocket pay enough for them to continue this work. I think the thanks of all growers are due Mr. Temple.

Mr. McKay: We certainly appreciate the co-operation of Mr. Temple at Winter Park, and, in fact, it has made the

continuation of this work possible this season. Mr. Temple paid out of his own pocket.

Mr. Hume: Shall I consider it a motion, Mr. Skinner, that the thanks of this Society be tendered to the department, and to Mr. W. C. Temple?

Mr. Skinner: Yes, please consider that a motion.

Motion seconded and carried.

Mr. Hume: The motion has been carried that the thanks of this Society be tendered to the Department of Fruit-Shipping Investigations in Florida, and to Mr. William Chase Temple for having made this work possible. Mr. Secretary, you will please attend to it.

Mr. Carroll: Speaking about clippers: I don't think the instrument is so much to blame for the injury done to the orange. Don't you think it is the man at the other end of the clipper more than the instrument itself?

Mr. McKay: Yes. I have seen cuts made with the best clipper. I have also seen practically perfect fruit turned in by men with poorer clippers, but doing good work.

Mr. Carroll: It has been my experience that injury to the orange is caused more by the man than the clipper. I have found that men who were careful had far less mechanical injury, under less advantageous circumstances.

I was greatly impressed not long since at a grove in this State where I went to see the gentleman who owned it. I could not find him, and at first could not find anybody, but I soon located them. I could hear them pouring oranges into the field boxes at least two hundred yards away. Of course that would not hurt an orange(?).

Mc. McKay: No, not if you eat it right away.

Methods of Packing and Shipping Citrus Fruits

H. B. Stevens

Mr. Stevens: *Mr. President, Ladies and Gentlemen:* I think it is rather out of order to call on this committee after hearing such an address as we have had on the same subject. It seems as though we can add nothing, and what we may have to say will fall rather flat after listening to such a fine talk as that was.

I presume I was given this subject so that I might offer such suggestions as I thought would help the grower to get his fruit to market in the best condition. In order to do that one must begin earlier than the packing house. The grower must know his fruit.

If he has some that he knows are delicate, and likely not to carry well, then he should so fertilize that part of his grove as to make the skin a little tougher. If he has a variety that does not carry well late in the season, then he should ship that earlier.

Then the greatest care should be taken in the picking and handling of the fruit, from the tree to the car, all along the line.

First. Have such clippers as will give the best results in cutting the stem close, and not injure the orange.

Second. Have baskets lined with cloth, so that the fruit will not get bruised in being placed in the basket, nor jammed by coming in contact with tree or ladder.

Third. Do not allow the picker to empty

his own basket, but have a special force to do that work, so he will not be tempted to pour his fruit out of his basket, when the boss is not around.

Fourth. Have your wagon so constructed that you can haul your grove boxes without putting one box on top of another.

Fifth. Have springs of some kind to take the jar off your fruit.

Sixth. Have no ventilator cracks in your field boxes except at the bottom corners, so your fruit will not get pressed into them, and so receive injury enough to permit the rot germ to find lodgment, but not enough injury to attract the attention of the grader.

Great care should be taken in feeding the fruit to the washer or sizer. I visited a packing house this winter and saw them grading tangerines; two men were emptying filled boxes into the hopper that supplied the grader. They piled the fruit so high that finally they had to put a full box on top of the pile to empty it. I thought, what is the use of putting tangerines in trays to make them carry well if they would stand all that. All fruit should be shipped as soon as possible after it is picked, for the fresher you can get it to the market, the better your trade will like it.

Fruit may be picked even when the

trees are wet from rain or dew, if care is taken not to allow them to stand long in the field boxes, while damp. If they are washed and dried right away, no harm will be done by their being picked when damp.

I think more attention should be paid to the grading of the fruit, as it is very difficult to correct a mistake after it has passed the grader. There should be some system by which a check could be kept on the grader, so that you could prove that he is the one who made the mistake; then he will be more careful than he will if it cannot be traced to him. The grading is much more important than the packing, as it requires closer observation and attention to business, while packing is more mechanical.

If the boss picker does his duty in seeing that the stems are cut as they should be, and the fruit handled right from the tree to the house, and the grader does his work as it should be, and the fruit is loaded properly in the car, there will be little complaint at the other end. But the best packer in the world can not overcome the damage done in the grove, nor discover all that has slipped by a careless grader.

L. B. Skinner

Mr. Skinner: I had intended making a short history of the packing house methods that I have seen since I went into the orange businesss, nearly thirty years ago. There has been a great evolution (or should I say revolution?), undoubtedly. But I have had so much to do that I could not prepare a paper, and

relied on my friend Mr. Stevens to give you the written report.

However, I want to emphasize one or two things in regard to this question of packing fruit by up-to-date methods.

Dr. Sadler has struck the keynote. Dr. Sadler's remarks, in my opinion, go to the root of the question. I do not entirely agree with the cooking of the orange, and the conditions caused thereby are entirely different from what we have to deal with, and I do not think that goes to prove much that will help us, because the antiseptic conditions caused by the intense heat cannot be applied to our packed oranges. But I do think that it is absolutely neecssary to get the fruit thoroughly dry—absolutely essential. I don't think I quite agree with him that pre-cooling the fruit is a mistake, because I think the scientific experiments in Washington far outweigh the single car they shipped under refrigeration. Their statistics are accurate, and the list of them, added up and a balance struck, tell the story.

The professors say that the remarks made about the grapefruit developing a little more sugar after the fruit is picked, will not do for us to state as a fact, but I tell you it is mighty pleasing to feel that probably it is true.

I think that the injury is in the field—largely in the field. Mr. McKay has been at my packing house a number of times, and Mr. Ramsey, too, and Mr. McKay and Mr. Ramsey have been in the field. They have become acquainted with my foreman and my inspector and gotten them interested. They have gotten

them to feel that their part of the work is absolutely essential, and when the inspector brings in his report to me, as he goes over each man's boxes he can give me a report of the number of clipper cuts, or long stems, for each man. He is interested, and interested in the results, and if you can get your foreman and your inspector and your men interested, you are going to win, and if you do not get them interested, you are going to lose.

Mr. Temple has been a great disciple of this careful handling, and I have not the slightest doubt that he gave orders to the foremen in his groves that every care should be taken this year, and if their fruit was decayed, there was bad handling in the field. That is the whole secret—get your men interested, get them to realize that careful handling on their part is the secret of the whole thing.

I remember one experiment in a washing machine at Largo here the department made an experiment. The washer rolled the tangerines until the pulp inside was separated from the outside rind. You would think they would rot, but those tangerines kept a wonderfully long time. They were thoroughly dried after they were washed, and I think that was the whole secret.

Sometimes we do not know how things are going to turn out; something happens we don't look for, but we do know that if we handle the fruit carefully, and exercise care through every process, we have every chance to win; but if we handle it roughly, we have every chance to lose.

One or two experiments have been

made this year, I think the first time accidentally, in pre-cooling fruit in this State; that is, there was a car, iced, placed during the decay period; I mean, there was a good deal of ice remaining in it that came down from the North; not especially placed as an ice car, but a refrigerator vent. The gentleman I speak of made up his mind to try an experiment, and put all the ice in the front bunker of that car and shipped it under ventilation, and he told me the best results came from the fruit carrying in that pre-cooled car. I think if we pre-cool fruit in this State and get it out of the State in twenty-four hours, they generally by that time reach a temperature that would keep it cool enough. Of course, this past season it was as warm in Washington as in Florida, almost, and the same conditions prevailed in both places. I was in Washington during the decay period in January. I was present when fruit was taken from the cars apparently perfectly sound. In twenty-four hours over half of that fruit had decayed, and in three days hardly any of it was left. Professor Ramsey told me he had gone to a store and bought a dozen oranges, and before they could be eaten half of them were gone. I asked Professor Ramsey to come and look over with me the oranges which were arriving. We looked them over and found blue mold decay.

That comes back again to the fact that the fruit must be injured or mistreated; if not by us, by the people who open up the boxes in the North.

I have made a good many experiments with this matter of drying, and have felt

that the result of those experiments is that we have to raise the temperature of the air in order to get this fruit dry enough to prevent decay. There are others who feel that if we reduce the temperature of the air and cool the fruit, it would be better. The results obtained this year at our packing house have been fine, and were gained by heating the fruit probably eight or ten degrees higher than when it came under the fans, and getting it absolutely dry.

If you take a glass and look at an orange as ordinarily dried, you will be more than likely to find infinitesimal spots of moisture in the pores of the rind, even though it seems perfectly dry. This is far from being dry.

As I said before, I think Dr. Sadler has struck the keynote. The point is to get your fruit dry, if you have to wash it.

DISCUSSION.

Dr. Sadler: I am very glad, Mr. Skinner, that you have been able to reach the same conclusion as mine. I have been sure for some time that I was right on principle. I would like to know if this is of value, especially to the Experiment Station, that it may be taken up in a scientific way and worked out to a conclusion. If we can only prove it, prove that fruit thoroughly dry will go through to the market, think what we can save on ice bills!

Here in Florida it is impossible to dry the fruit on some days. I have seen days when the air was absolutely satu-

rated. You might blow all the air in Florida over that fruit, and you couldn't dry it. The temperature must be raised and our packing houses equipped so that we can dry it under all conditions.

Mr. Skinner: The question of refrigeration has been brought up, and the expense of it. I suppose some of you are aware that we are paying about twice as much for refrigeration as we ought to pay. Refrigeration charges are in the neighborhood of \$50.00 to \$75.00 per car. Refrigeration on vegetables is a good deal less. There is an effort being made to get this refrigeration charge reduced. At the Tampa meeting of the Orange and Vegetable Growers, this league was formed. One of its purposes is to help growers get the money out of their stuff whenever it is possible. You see, I am advertising right now. I am advertising the League. We are trying to get together a number of shippers to make this thing a success. The cost is not much: Only \$1.00 for each member and an assessment of 25 cents on each car for all of the product shipped. It looks like a little amount of money, but if everybody would come in and do their part, we will probably be able to do our part and save \$25.00 or \$30.00 a car on every car shipped. It is time for everyone to help. It is not my business, nor any one person's business, but the business of all of us. You ought to help organize the League, because with your earnest support it can save you lots of money.

Take the Florida Shippers' Association; it is a very small Association; just a few men, and yet they have saved this

State over a million dollars since it was formed. There is no telling what this League can do if supported by the growers of this State.

Mr. J. H. Sadler: I know men who ship out oranges under refrigeration who believe it is the cure for all evils. They handle their fruit in a more or less careless way in their groves, but think that by shipping it in an ice car it will get through in good shape. Now, to my way of thinking, that is a mistake.

We are trying to settle that difficulty in my neighborhood and my Association—if I may call it that. We are trying to get at the point by careful handling. During the months there was the worst decay, we reduced our decay down to 2 3-4 per cent. We did that by careful handling in the field. We worked every scheme possible to get it properly picked; we washed it and got it dry. When we first started out to do this washing and drying proposition, we made an absolute failure. Our machine did great mechanical injury, so we tried drying it in the sun. If the sun shone, the fruit was dried, and if it didn't shine the fruit did not get dry. Yet we got good results on account of the careful handling of the fruit. Now, we have machinery and appliances that give us the results I have mentioned.

Away back in the early history of the country, we had a cheaper freight rate than we have now. The point of the whole matter is that our commodities cost so much more to market now. I think the icing business is a mistake, in some ways.

I remember the time when tomatoes

were shipped in a plain pine box, sawed out right there, and our stuff went into the market, not very attractive, but it brought the top of the market. Some smart, progressive man came down and brought in a car of crates, the kind that has since become the standard. I think the price was about 40 cents apiece, as against 7 cents for the other kind we had been using. They were fixed up mighty nice, and when they were shipped they brought about \$1.00 ahead of the market. People went crazy over it, and every fellow was going to be a little smarter than his neighbor, and everybody had to use them. It just about trebled the cost to get our product put up.

So far, we seem to think that we can solve all our difficulties by simply spending money. Mr. Temple is a great advocate of careful handling; Mr. Temple is correct, too, but I think if our business is to stay alive and be a success we have got to come down to consider the matter from an economical standpoint. It seems to be customary to settle everything in some expensive way. The extravagance is alarming, and we have no way to stop it, it seems. I have had to settle the greater part of my difficulties economically. Now, if we can only prove that if we handle our fruit carefully and pack it carefully, and save that icing expense of \$60.00 or \$70.00, think how much it will save us. As I said before, I believe the icing question is a mistake. I am, of course, strongly inclined to think what Mr. Temple says is all right, but when he advocated this icing so earnestly, it was all I could do to keep from going

into the question in print. The whole question can be solved in some other way, and it should be done.

Mr. Carlton: There is no doubt but that refrigeration is practically prohibitive. Since a good many of us have to depend on ventilators, I would like to ask if in your opinion the ventilated cars are adequate. It is my experience that there is nothing that can remove the moisture better than thorough ventilation.

I think a good deal of criticism could be brought to bear on our packing houses, too. In many instances our packing houses are kept closed almost air tight, from twelve to fifteen hours every day, the doors being opened only when the fruit is being packed. We should have ventilators that are arranged to keep currents of air moving over our fruit as much as possible. That will remove moisture more than anything else.

Mr. Thompson: I just want to say one word in regard to refrigeration. We have had a little experience at Florence Villa along the line of refrigeration, in that we felt that was the panacea for our troubles, and from an experimental standpoint. We put some cars under refrigeration and shipped them at the same time we shipped other cars without refrigeration. The result in the market was not in favor of refrigeration any more than the other. That has been our experience and so far as our packing and ventilating the cars; we always strip our cars; that is, a space of six inches is left between the boxes for the air to circulate freely over them. We washed all of our fruit

and dried it with a mechanical dryer. It would be impossible to do it in any other way. We find our fruit more attractive if it is clean, and while it is not absolutely dry, yet we shipped last week an average of five cars a day, and we fixed it up in that way.

It is rather a difficult proposition to dry in the sun. It cannot be done at all times successfully.

We have had not over 1 per cent. decay. I think that is a pretty fair record.

Mr. Ley: I would like to go back a few years from where this gentleman, Mr. Skinner, started a few moments ago. I think he said he had been shipping a period of thirty years. My shipping ended almost at that time, and I had quite a little experience in gathering and shipping according to the old way. In those days, such things as poor carriage was unheard of.

Our method of gathering fruit was that followed by three boys. An orange tree of that time was no more thornless than they are today; notwithstanding that, one boy would get into the tree and throw the fruit to the one below, who would drop it on the sand. We didn't have only about 200 or 300 barrels in those days (the square box was unknown), and we had no wraps, and I believe the secret of its keeping qualities was in the drying process. The sand where the fruit was dropped was hot; so hot that it would almost blister our bare feet, and there was no moisture left on the rind of an orange that had lain there a few minutes.

Of course, we did not gather oranges

when it was raining; always when it was dry, and when it was dry weather at Micanopy it was maybe raining at Ocala or Gainesville, so they could not gather them there, and we would have an open market for the Micanopy fruit.

Then the barrels were carried into the groves and little holes were jabbed out for ventilation, and we put the oranges in those barrels absolutely dry; those small pores even were dry, and we put them in the barrels, without sizing, of course, for we knew nothing about sizing, either, in those days, and shipped them all from the size of a hickory nut on up. We hauled the fruit into town in a wagon without springs, and got a pretty fair price, too.

I merely want to emphasize the point that the fruit left our groves absolutely dry, in good condition; it carried well, and sold at satisfactory prices. I firmly believe, sir, the main point in the shipping fruit question is to see that it is dry. I have always had my doubts about the benefits of wrapping the fruit, for I should think it would prevent the contact of air with the surface of the orange.

Mr. H. B. Stevens: I want to emphasize the point of handling fruit under the check system. We keep a check on it from the time it is gathered until it gets in the car. I find it well for each man to lose his identity and be known by a number. A record is kept of each man's faults, not known except by number, by the men who have charge of the picking, and if it escapes them it comes to the carrier wagon, which can carry

thirteen boxes without putting one box on top of another. It comes to the washer, and if he sees anything wrong he immediately marks the number on the box. A copy of the list is kept for me. The next morning I take this list and look it over. I don't know who the man is, but there is the full record: "Number So-and-So has picked so many hours, so many boxes, so many complaints lodged against him." If his faults are bad and he cannot or will not correct them, we tell him he must look for another job. If the complaints grow less I commend the men for it before the whole crew, and they very much appreciate the compliment.

We pay by the day—not by the box.

This year we have not shipped a single car under ice, and we have not stripped a single car, although I do not object to it, but I so loaded my car that it can be thoroughly ventilated. It is loaded so that the heated air which rises to the top is carried off by the motion of the train. We have had complaints about one or two cars which showed a little decay.

Up to January 1st, we had only one refrigerator car. We could not get refrigerator cars. After January 1st we had the common refrigerator and, as I say, we have had but little complaint the whole season through.

Mr. Pierce: Fifty years ago, when I was a young man, the orange crop in Polk County had to be hauled to Tampa by team, sometimes as much as forty-five miles. We could not get empty barrels in those times, and so we would use pine straw, if we could not get hay,

and put it six or eight inches thick in the bottom of a wagon and dump the oranges in and haul them to Tampa, then dump them into the hull of a boat, and they went to market that way. Some of us got results from it, and some of us didn't. We carried them to market that way, rain or shine. A few freight teams were pretty well fixed up; some had covers, and some didn't.

I am glad to see you people are leading in the discussions we are having, and you are going to have success, but you have to consider natural circumstances. You cannot do away with them; you cannot avoid them. Natural conditions are going to prevail. I am a Cracker, I know, but I have had fifty years of experience, and I am willing, climatic conditions being the same, to take a piece of land side by side with the scientific men, and go into any kind of a test with them. I can do just as well as they can when it comes to getting things out of the ground. Experience and science are good things, and it is a good thing to mix them. Each works better with the other than it does alone.

There have been some big things to happen in the last few years in the orange industry. The last few years have seen the big commercial enterprises, and then people are beginning to see the relation between consumption and production. Then we are beginning to see the relation between producer and consumer. Gentlemen, we all know the fluctuation of a market when some man in New York or Washington, sitting behind millions of dollars controls it, and we know

there is something else at work besides consumption and production.

Mr. _____: Did you pull those oranges, or did you gather them?

Mr. Pierce: We pulled them. If they came off easily when it was pulled, it came off.

Mr. Hume: I will have to call time, I think, and ask if there is any further discussion before we go on to the next subject.

Mr. Pierce: Well, maybe I will get another chance before the meeting ends.

Mr. Bartlett: I have shipped oranges out of this State since 1883 to the time of the freeze of '94 and '95. Like the gentleman on my right here, I, too, have had a little experience along that line. We had the same trouble then with the rot that we have now. I myself went to Cleveland, Ohio, in 1885 and 1886 and bought oranges. I went to the warehouse and sorted them over. I sorted out four or five boxes before I got two boxes.

On the other hand, I have seen oranges shipped in bulk to Cleveland that went in sound condition. I endorse most emphatically all that has been said by Mr. Skinner and other gentlemen in regard to having your fruit dry. My experience bears out theirs.

I picked oranges this last year in the rain, but they got dry. Some of them reached the market all right, and some did not get there. They were put through a washing machine.

I used to make orange boxes myself with a saw, and I think I have the honor of bringing the first veneer mill into this

State that made orange boxes out of pine logs.

I think we cannot put too much emphasis on the point of having the fruit dry. In those days we did not wrap,

but sometimes they go all right one way and sometimes another. Sometimes we get a big price, and sometimes we don't. When our doctors disagree, what are we poor laymen going to do? We must use our own judgment.

Methods of Handling Groves on Terraceia Island

T. Ralph Robinson

In the absence of the chairman of the Committee on Methods of Handling Citrus Groves, I have set down not any rules, but merely a few observations on this subject.

As a newcomer to Florida, my observations will necessarily be limited to and perhaps apply to a rather small section of this large State. The grove practices on Terraceia Island, in Manatee county, have been alluded to and discussed at some length in the "Florida Grower," especially the methods followed by Mr. C. S. Blood—called by the editor of the Grower, "The Blood Method."

The groves of the Terraceia Estates, now under my care, were set out under Mr. Blood's direction, and his methods used in most of the setting.

First of all, the method or system consists in close planting, the spacing being 14 feet 9 inches in squares, giving 200 trees to the acre. The trees are set on mounds eight to ten inches above the level. They are headed low and grown in bush form.

For the first four or five years the trees are hoed around and the open ground cultivated with the cutaway and Acme harrows, keeping the harrows from running close to the trees. After that the only implement used is the hoe. The stock generally used is the rough lemon, budded to

grapefruit. Few oranges are now grown on Terraceia. Fertilizer is used rather liberally—it is simply broadcasted, no especial effort being made to work it into the soil other than the occasional hoeing the grove receives. Irrigation by means of flowing artesian wells is rendered very easy, and water is plentifully supplied when needed, so that the soil at all times readily takes up the soluble part of the fertilizer applied.

After six to eight years of normal growth trees so planted should shade the whole area so that very little hoeing is required. The feeding roots are very near the surface, and the aim now is to disturb them as little as possible.

The dense shade in such a grove reduces rust mite attack to a minimum—it might on the other hand favor such fungous troubles as melanose. The shade also protects the ground in summer, like a mulch, from the fierce heat of the sun, so that the surface feeding roots are uninjured. The thickly planted grove also furnishes its own protection, in a large measure, against wind and cold.

As to results—the production of fruit and profit—as soon as the roots of the trees meet across the middles, and they are thus competing for ground, the growth of new wood becomes somewhat restricted, but they take up the business

of bearing fruit—nature's first effort at reproduction in the struggle for existence. They are thus producing some fruit at three years, and a considerable crop at four years from setting. At eight to ten years they are practically in full bearing. Of course, this assumes that they have been set out on ground suited to the production of a grove, and have been given at least ordinary good care in the matter of cultivating, fertilizing, pruning, etc. Drainage is also an important factor in the steady growth of a grove, especially on our low hammock soils.

The method briefly outlined is practised with some exceptions and variations, quite generally over the island. Most of the plantings will give 100 to 150 trees to the acre, though there are a few acres that will exceed Mr. Blood's standard of 200 to the acre by a hundred or more. Instead of setting in squares, the hedge-row method is followed by many, spacing the trees twenty-five or twenty feet by ten or twelve feet. In one grove there are two rows on the edge of the grove, spaced 20 feet by 5 feet—90 trees in all—that yielded this year a car load of fruit from one-fifth of an acre. These trees were set by Mr. W. L. Halsey more especially to act as a wind-break, but they are certainly serving a double purpose.

There are obvious drawbacks to such methods of close planting, chief of which to us is the difficulty of picking and hauling fruit out of the grove. This is overcome in some degree by omitting occasional rows, and using sleds or hand carts out to these roads.

It will also be objected that the normal

or wide spaced grove, say seventy-five to the acre, will be at twenty-five or thirty years the best money maker after all—perhaps so. If, however, the owner of a close planted grove finds after a term of years that his trees are really suffering from over-crowding, it would not be an impossible thing to take out every other row. He would still have left as many trees to the acre as the average grove.

Some of the close planted groves of Terraceia are now fifteen years old or older, and are showing no signs of going back as yet. They have already paid for themselves several times over, and have well satisfied their owners with the method of close planting, at least for Terraceia.

DISCUSSION.

Mr. Hume: The question has been asked, Mr. Robinson, as to whether it is necessary to prune the trees on Terra Ceia Island.

Mr. Robinson: The only pruning we do is to take out all the dead limbs, leaving a roadway under which a mule can travel.

Mr. Marks: I would like to ask if the trees in the Platt grove are on ridges, and what the capacity of those 15-year-old trees is.

Mr. Robinson: The trees are set on mounds, which practically places them on ridges. We irrigate the surface, running water down the middles, and capillary attraction takes it up to the tree.

Mr. Blood's grove this year, ten acres, turned out over 8,000 boxes. Mr. Painter says one year, 11,000.

Mr. Marks: That means he gets about three to five boxes to the tree. Mr. L—— has a grapefruit grove, trees set about 22 feet apart, where thirty-five trees produced between 1,200 and 1,300 boxes; that makes about thirty-five boxes to his trees, as against five boxes. His trees are set about eight to ten feet apart.

Mr. Hume: Same age?

Mr. Marks: Fifteen years old.

Mr. ———: I recently picked grapefruit from budded trees not over seven years old. I sprayed my trees with Bordeaux Mixture, making them drop one, two or three boxes. There were about ninety-odd of these trees, but from the most of these trees we picked, week before last, from eight to thirteen boxes. They are either six or seven-year-old trees, planted twenty-five feet apart.

Mr. Prouty: Some time ago I decided that it was not the best plan to spread fertilizer over the surface, so I decided to make a soil for my grove. The old growers laughed at me, but I had decided I would not put my fertilizer on top of the ground to feed the weeds. I set my plow so as to regulate the depth I wanted my roots to go, and attached a distributor to follow the plow and broadcast the fertilizer in the bottom of the furrow. "Now," I said, "the roots are going after the feed; I want them down under the ground, and not coming to the surface to dry out."

We plowed and fertilized in the same

way for cantaloupes and for watermelons, and you ought to see the cantaloupes where I tried this plan, and where I didn't put any fertilizer at all, and where I put it on the surface. It certainly furnishes a striking comparison.

In my grove I am trying it out this year, and next year I will tell you how it pans out. I put 400 pounds to the acre in my own grove, where other people said I should put 1,000 pounds. Some of the fertilizer men said "You will put us out of business." I said, "No, not if you can show the people that they get the good out of every pound of fertilizer they use."

I have one grove that was run down, and I bought it for \$60.00 an acre, and the man who sold it to me would like to get it back for \$1,000.00 an acre. In that ten-acre grove I have put the great amount of two tons of fertilizer on this plan.

Now, I am giving you this for what it is worth. I am the best person to "fall down" you ever saw, and pick myself up again. I can run backward as well as forward. I just want to call your attention to my theory that it is best to make a good, solid, universal soil, instead of a special soil, so that all the ground is good, instead of a little layer of it. It is working well, so far. The demonstration has worked out all right, to my own satisfaction.

I made this machine for my own use —it is not on the market.

Methods of Handling Citrus Groves

W. J. Ellsworth

Mr. President, Ladies and Gentlemen:

After reading over the reports of the past several years on the subject of Methods of Handling Citrus Groves, it appears that this work has not yet been made an exact science, as a quite wide divergence of practice is found, often under seemingly similar conditions of soil. That widely divergent methods will obtain, however, is at once manifest when the greatly differing character of soils used in citrus fruit growing is taken into consideration.

In my section, the highlands of Pasco county, we have varying grades of high pine and hammock land, usually of a medium sandy character, and my experience in the handling of groves has been gained under these conditions. I have no expectation of being able to present anything new or striking, but will briefly detail the methods I have up to this time found to give favorable results.

The prime object of the grove is of course to obtain the greatest possible net return, hence the aim is to eliminate all unnecessary expense, riding no hobbies, indulging no fads.

Assuming the work of this committee covers the planting as well as the maintenance of citrus groves, it seems well to

commence at that point and carry the work to the bearing grove.

The prospective planter will find it to his advantage to select the best soil available and as near as practicable to transportation. If new land, the clearing should include thorough grubbing in order that later cultivation may be carried on in the most economic manner.

For breaking the land we prefer a small turn plow, as this leaves the turf in smaller slices than the larger plow, and we like this to run to such a depth as will thoroughly subdue the deeply rooted grasses and weeds. When necessary to break up the turf we follow the plow with a Cutaway harrow, and finally lay down smoothly with the Acme.

There is no excess acid condition in soils of this locality, hence we resort to no sweetening processes in advance of planting.

When planting I have found it the best practice to mix with the soil to be used about the roots of the trees one-half to one pound of a good tree grower fertilizer. After planting we water liberally and bank the trunk of the tree to a height of eight to ten inches with a view to conserving moisture and firmly secure the tree against being whipped about by high winds. If planting prior to the

middle of February the banking is carried to a height of fifteen to eighteen inches as protection for the trunk against a possible severe cold.

On light land we plant twenty-five feet apart, thirty feet or further in rich soil.

We like cultivation to commence about the middle of February, the first work being done with Cutaway harrow in order to thoroughly subdue trash and weeds so that the Acme harrow can be used. Harrowing is continued every ten days to two weeks until June, or when the rainy season is well started, after which grass and weeds are permitted to grow in the middles during the balance of the summer. The hoe is used to keep down growth in the fertilized circle about the trees.

If the land is particularly lacking in humus we plant Velvet Beans in the middles the first year, but when there is sufficient natural growth to afford a fair covering for the soil after suspension of general cultivation we prefer such, as we are enabled to carry on team work both ways, decreasing the amount of hoe work about the trees. During the summer we run the mowing machine one to three times to keep down growth, so that a fair job of plowing may be possible in the fall. This fall plowing I will say is for the purpose of getting rid of the dried vegetation as a fire menace rather than cultivation of the trees.

Believing in the homeopathic practice of small doses frequently taken, we make light applications of fertilizer to the young trees four to five times per year, amount dependent on the apparent needs

of the trees, aiming to push development all possible.

The plowing in November, running the plow as shallow as possible to mix the grass with the soil, and an application of fertilizer at this time closes the season's work in the young grove.

Our fertilizer for young trees is derived from sulphate ammonia and blood and bone, sulphate potash and bone black, and is harrowed in. No change in the formula is made until fruit production requires, except lagging trees are given a light dose of nitrate of soda to hasten them along.

Handling of the bearing groves is a delicate accomplishment, and careful effort is made for such adaptation of methods as to secure proper amount of wood growth and best quality of fruit. Commencing cultivation much in the same manner as for the young grove, the use of the harrow is continued at intervals of two to three weeks from February to the latter part of May, after which the work is continued with the mowing machine only. Fertilizer is applied four times per year, February, June, about September 1st and November, mostly with a McWhorter distributer run as close to the trees as the branches admit. Once a year an application is made by hand to such parts as the distributer can not reach. The spring and fall application analyzes about 5 per cent. ammonia, 6 per cent. potash, 6 per cent. phosphoric acid. For summer application when the supply of organic matter is abundant we decrease the ammonia and increase the potash, and we also vary these materials according to the character of

the land or the supply of organic matter in it, taking the appearance of the trees as a guide and endeavoring to as fully as possible supply their needs.

Reference has been made to discontinuance of cultivation in June, this with a view to fostering all possible vegetative growth to secure shade for the soil and increase the humus content, and of such importance do we regard these two points that we make no hay in our groves, returning to the soil all the growth produced. I consider that the grower who makes hay in his grove, particularly a bearing grove, pays a big price for his hay.

Protection of groves from frost is an undertaking of man's size. For some ten years we provided such protection when needed by means of wood fires, making an entire success of the work. The

limitations of this method are so great, however, in view of the difficulty of securing sufficient labor, we were induced to yield to the claims of the oil-pot men, and put in Hamilton Smudge Pots. We have the three-gallon size, and place them in the grove in pairs fifteen feet apart. Our experiments showed that with the lid pulled out to afford a burning surface of forty-eight inches, three gallons of oil would last about eight hours, hence to be sure of an all-night burn when necessary, we place the pots in pairs. As we have not yet had occasion to fire, we can not give anything in the way of results. However, the fact that fuel oil has increased in price from 2 1-2 cents per gallon three years ago to 5 1-2 cents the past winter, leads me to conclude the position of the Standard Oil Company as the stronger of the two.

Lake County Crop Improvement Association

Jack Peters

Mr. Peters: *Mr. President, Ladies and Gentlemen:* I was a little bit disappointed in the course that I should pursue this afternoon in this discussion. Having been given the subject "The Work of the Lake County Crop Improvement Association," I naturally thought that I would discuss the work that I was doing more particularly. But I learned since my arrival here that possibly some explanation about this organization, and how it came about, would be more appropriate.

Explaining it as well as I can, I would say this: The National Grange Exchanges, of Chicago, have appropriated a million dollars for the purpose of diffusing information and advice among the farmers. Their proposition goes to the county unit in something of this wise: The county organizes itself into a Crop Improvement Association, and they must raise a sum equal in amount to the sum donated, or possibly double the amount that is donated by the National Grain Exchanges. Now, Lake County was the first county in this State that accepted their proposition, so they proceeded; first, the county commissioners gave to this cause \$1,000.00 per year for two years; and then by public subscription there has been also put into this fund an equal amount by the leading citizens, and citizens generally of Lake County.

But the Association also consists of a membership, and for anyone to become a member of the Association requires the paying in of a fee of \$1.00. So that the \$1,000.00 that is appropriated by the county commissioners, and the \$1,000.00 appropriated by the National Grain Exchange, and the \$2,000.00 added by subscription and the membership fees—and at this time I do not know how much this aggregates—creates a fund that has been raised to carry on this work of crop improvement for two years' time.

The National Grain Exchange, through its Secretary, Mr. Bert Ball, feels sure that once an adviser is employed in a county and operates for two years, the people will clearly see that much good has been done, and that much good can be done through this line of work, and once established it will be kept up for years, and possibly indefinitely.

As your President has said, other States in the Union have long ago adopted this plan, and there are many States in the West and Middle West that today have their Agricultural Adviser, or possibly known by another title, operating in counties there, just as Lake County has a man operating in Lake County.

After they had completed their organization, according to the dictation of Mr. Bert Ball, it was necessary to em-

ploy an Adviser, and they communicated with me, and the result was that I entered their employ for two years' time.

Of course, in this organization to get it systematized, we have it working under various heads, or committees; for instance, we have a Committee on Farming, a Committee on Poultry, a Committee on Dairying, one on Horticulture, one on Education, one on Good Roads; I believe in all there are eight different committees, through which the Agricultural Adviser is supposed to work. We have these committees assemble. They are men chosen from all over the county who have been successful in that particular line of endeavor; men who have a good, practical working knowledge, and some of them a good deal of scientific knowledge on these subjects.

We assemble these committees and discuss this particular point of the agricultural welfare of the county, and in this wise we are trying to diffuse knowledge on these subjects.

I am supposed to be traveling all the time looking after the interest of the farmers and fruit growers and vegetable growers. I am to make as many calls in that county as I can. I must also sustain an office, and this office is in the court house at the county seat; that is a part of the agreement, that the office must be in the court house and subject to the command of everybody in the county. I do not know whether they make any difference to those who are members of the Association, or not.

When I went to the county, I proceeded immediately to work; the people fur-

nished me with a conveyance, and put me on the road, and I am busy six days in the week; if it were not that it is so much against my religion I am afraid I would work on Sundays, I get so badly behind.

Particularly, we are looking after the improvement of the crops. We want to carry on in that county demonstration work. We have had operating in the State before farm demonstration work. We are carrying on in Lake County now, demonstration plots throughout the county where the farmer tries out different methods of dealing with soils. I frequently quote this agricultural axiom: "If you will get the sourness out of your land, it will help get the sourness out of your disposition."

This difficulty I find in the soil with the aid of litmus paper. When I find it I advise the use of lime. Then I advise different methods in the preparation of seed beds, in tilling the soil and other things, and I have found a number of farmers willing to take my advice on this score. We expect in the fall to make a report of our demonstration to see what results we can get in this particular way.

You have heard the old adage, "Fill your ground with humus, and you will fill your barn with grain." I find in Florida there has been too much burning up and burning out of the humus from the land. On that point we are doing a good deal toward changing the methods. This morning, I was interested when you were discussing the matter relative to culture of citrus groves. I have had all those questions put to me,

and I have had the opportunity in my work to see the various methods tested out. I think Mr. Painter is right in a great many of his views, but it seems to me from what I have seen, being out in the fields and through the groves every day and all the time, that we might say that leaving off the culture of citrus fruit trees in all lands and in different sections of the State, might some times be a mistake. I think there are some groves that would be much benefited by proper cultivation methods. Never would I advise plowing, but I think it a good idea to establish a dust mulch in the spring time and keep it until summer. Then, after the cover crop is well grown, cut it into the land to procure an amount of humus.

There are other groves where non-cultivation of the soil would be the best method to pursue, or mowing the vegetable matter from time to time, thus establishing a vegetable mulch on the ground. The matter of establishing a mulch, and keeping it on the soil, is important. We have the choice between two mulches, the vegetable and the dust mulch. In some localities, it seems to me a vegetable mulch answers the purpose; in other soils it seems to me that the dust mulch answers the purpose better. A man who knows the conditions, sees the condition of the trees, understands something of the fertilizers, can usually recommend just the particular treatment that grove needs. Mr. Painter's advice may be a good general advice, but it does not work in all cases.

Besides the cultivation of groves and the tilling of the land in the regular line

crops, I am trying to encourage the growing of more stock. We believe that while Florida will in the future be an agricultural State, it must also be a live stock State. We have advantages in this State for the growing of live stock and growing them more economically than in other States. We need to take advantage of these opportunities.

These are some of the doctrines that I am preaching in Lake County. We hope in the future, to have people begin to think of growing more forage and more pasture crops. By way of parenthesis, I would say that the South African grasses introduced into Florida are proving very successful on our Florida soils; I refer to the Natal and the Rhodes grasses. With these crops and the Velvet Beans, we can have rich pastures for our live stock all the year around.

We want to improve the blood of the stock. Some times, in discussing this matter of live stock, the people get to believing I would advocate a no-fence law, but I am not taking any position on that subject whatever, but I say we must have more stock and better blooded stock. I am proud to see the movement throughout the State of Florida to eradicate the tick and the Texas fever. I think it will be soon when we will have perfected ourselves on these particular points.

Then it will be easy to organize our live stock clubs and diffuse knowledge in the production and care of our horses and cattle and hogs in this State.

We have been trying as much as we can, and we have had the assistance of the Experiment Station and the Agricul-

tural College, to eradicate the diseases and insects of the fruit trees and diseases of the regular farm crops and vegetables. With a man giving his entire time to this work, it is plainly to be seen that he has the advantage over a farmer who is busy with his other work and duties, and the Adviser can be of a great deal of assistance to him. I have the pleasure to state that already this year I have been able to divert on a ten-acre farm the thrip worm that had started. Most of you know something of its capacity for damage. This farmer had lost his fruit for several years. It is an easy matter to remedy; it did not require much skill, but if it had not been known the man's ignorance would have caused him to lose his entire crop this year.

We find that we have been a great deal of help to farmers along other lines. In

Lake County there are a great many natural advantages. We are doing work along the lines of building better roads. I want to add to this, better schools. We find there is some advice we can give on this point; in fact, it takes a pretty good, all-around man to be an agricultural adviser. It is beyond the capacity of any ordinary man, and I could not have undertaken the duties except with the promise that the College and Experiment Station would assist me.

I am sure other counties which go into this work will have the assistance of the National Grain Exchange, the Department of Agriculture at Washington, and the agricultural forces of this State. They are trying through their advance agent, as I am pleased to call myself, to do a great deal to better the conditions in the State of Florida.

Questions From the Question Box

Mr. Hume: Now is a good time to open the question box.

Question: Is clean culture the best method for caring for an orange grove?

Mr. Hume: I will call on Mr. Painter to answer that question.

Mr. Painter: I would say not. I want to go on record right here as saying that I believe more damage is done to an orange grove by a plow and a cultivator in the wrong hands than any other source from which an orange tree suffers.

Let me ask a question: What orange was it that made Florida famous? It was the orange that was grown in the hammock. When I first came to this country, there were very few orange groves, except those in the hammocks. There we found the wild orange. We went in there and cut off the wild orange and budded it. It was impossible for a man to get in there with a plow, and consequently the trees were left without cultivation, and the only cultivation they had was flat weeding once or twice a year. I don't believe any grove that is cultivated can equal an orange that was produced at that time. I think Brother Sampson there will bear me out, for I think he used to get \$5.00 or \$6.00 a box for his oranges in the first place, and I doubt if he gets that now.

The orange tree is a surface feeder. Now, I have heard some growers say that they were going to plow three or

four inches deep to make the roots go down, so that they should go down for moisture. That reminds me of a long time ago when my father planted a garden. Among other things, he planted some beans. A few days later my sister found out they were sending a root down, and she turned them all upside down so that the root would come up first.

In other words, we are trying to work against nature. As I travel over the State, I have opportunity to see orange trees in a good many conditions. This morning I was in a grove where the owner had persisted in cultivating year after year, and yet in his own yard there are several grapefruit trees growing up out of the Bermuda grass that has not been destroyed for some time, and those trees right in the solid Bermuda grass are looking better than out in his grove, where he has been irritating them for the last two or three years.

Now, I think if you orange growers go home and find a tree you have not irritated for the last two or three years, giving it something to eat and letting it shift for itself a little, you will find it the best looking orange tree you have on the place. The orange tree, in my observation, likes to look for its own feed, and if it is not in the soil, put it where the tree can find it. It will repay you, not only by good looks, but by good fruit. The best fruit

I have eaten came off a tree planted in a Bermuda sod, and that sod had not been disturbed for a number of years.

It is also my observation that fruit from trees not continually cultivated, keeps better and hangs longer on the trees than where they are irritated so much.

I cannot understand why a man thinks he is helping Nature along, after a tree has been growing and putting out a network of roots, when he comes along with a plow and cuts those roots all off. I never have been able to see the philosophy of it.

Some time ago, I went into a greenhouse and saw them growing orange trees in pots, the size of that tub yonder, with fine crops of fruit on them. I asked how it was done, and was told that nothing special was done, only the tree was kept in the pot until it gets root-bound and until it commenced to fruit. That gave me the first idea that here we are cultivating our orange trees too much after they get to bearing size. At that time I was editor of *The Agriculturist*, and my theory called down storms upon my head, and the most successful growers scoffed at the idea of doing away with the cultivators, and said they would have nothing to do with it. I maintained that it was a question whether the owner was going to get anything out of the grove where he had to spend all he made on cultivation. My idea was if they could take care of the grove so that the owner could get something out of it, they would have a fair chance of continuing in the business.

I make it a point to observe all groves that are not cultivated and taken care of otherwise, and I have found that the trees invariably are doing best. Over at Winter Haven a short time ago, I went out and found in a gentleman's yard five or six trees that were much better than those back of his house, where he was out with a plow. And yet he wanted to go out and plow up more!

I think if you give your orange trees a chance to do a little of their own foraging, they will repay you for letting them alone.

Mr. Orchard: Mr. Painter, suppose you had a case of a rather light, sandy soil with a moderate crop of herbage on it. Following a rainy season in which the soil was submerged, or partially submerged, with water, would you break up the compactness of that soil and tendency to non-aeration? How are we to get air into the soil again without some cultivation?

Mr. Painter: I would like to ask the gentleman how the hammocks were aerated where we found the orange growing naturally? It was simply by the plant root going down into the soil and decaying.

If you go into a grove where cultivation has not been applied, you will find it more moist and friable than one that is cultivated. Of course, in some of the groves where a harrow is used, the top soil is like a powder, but under that it is hard and compact.

In regard to the question as to how that particular grove should be taken care of to get the moisture out of it, I

think a person should be careful in locating a grove, so that it should not be flooded with water.

Mr. Orchard: Of course, we all know that the humus content in hammock soil will run 15 per cent. higher than in almost any other kind of soil, but leaving the question of the humus content of the soil out of the question, the difficulty I find has been mainly in breaking up the packed, solid condition of the high flat woods soil and pine ridge soil after a period of rainy weather.

Mr. Painter: There are always exceptions. A man would not go to a surgeon if he had his hand cut a little bit, and have the whole hand taken off, but if that hand were poisoned so that there was danger to his whole body, he wouldn't hesitate to have the surgeon cut it off. So, I think if a grove got in that compact condition and the only way to save it would be to plow it, I would say "Go ahead and plow it."

But under ordinary circumstances, I would advise a grower to do everything he can to increase the humus in his grove by letting any kind of vegetation that will, grow, and cheat the fertilizer man all you can in that way.

If you have men whom you must keep employed, rather than have them plow your grove, let them go out and gather oak leaves and grass or anything you can find to bring into your grove to add humus to your soil.

Some time ago, a man called on me and asked my advice in regard to taking care of a grove, and I advised him to quit cultivation. He told me he had

hired a man by the year, and bought a pair of mules. I told him it would be better for his grove to turn the mules into the pasture, and let his man go fishing.

Mr. _____: Will it take more fertilizer without plowing than if you plow?

Mr. Painter: No, sir. It will take less, I think, without plowing than with the plow, because when you cultivate you take away any possible chance of vegetation growing to add nourishment to the soil. What has made our hammock lands so rich? It is the accumulation of humus year after year. Our pine lands are poor because they are burned over every year. But get where the fire cannot penetrate and you will find rich land. The accumulation has gone on until it has built up the soil so that you will not need to add much plant food to produce results.

Question: What is the best method of underground drainage?

Mr. Hume: Mr. Robinson, we would like to have you answer that.

Mr. Robinson: When you have an artesian well, I think sub-irrigation is preferable. Where you haven't, I think the Skinner system is the best.

Mr. Hume: The question was, the best method of underground drainage.

Mr. Robinson: I know of only one way; that is open and closed ditches. I prefer the open, but a good many people like the closed.

Mr. Hume: Use tile, in other words.

Mr. Angst: A great many people have tried to use dynamite for that. In some places they have been successful;

other places, not. If you have a porous subsoil, you can use it to advantage, but if you have a rock bottom underneath your soil, it is foolishness to use dynamite. In the neighborhood of Fort Myers, about thirty or forty inches below the surface there is a narrow, compact, dry strip known as hard pan. You will find this time of the year the water stands on this hard pan. A charge of dynamite allows the water to flow into the soil underneath. A great many growers have been very successful in using it.

Question: Is the presence of Bermuda grass or nut grass in an orange grove detrimental or otherwise?

Mr. H. B. Stevens: We have a grove where the Bermuda grows so thick a wagon or a harrow will not make an impression, and I see no bad results from it.

Mr. Adams: I have a grove just full of Bermuda grass, and I see no bad effects.

Question: Is 4 per cent. ammonia too much for an application in May or June?

Mr. Pool: It depends very much upon the condition of your trees. If your trees are thrifty and you want to push the next crop, I do not think it is too much, but if your trees are diseased and have die-back, don't put on 4 per cent. For general purposes, with healthy trees and a heavy crop coming on, I think 4 per cent. is not too heavy.

Mr. Hume: You must not lose sight of the fact that while percentage is a nice thing to talk about, the basis is the number of pounds you use.

Question: Has any one had experience with the use of the picking sacks for oranges? How do they work?

Mr. Thompson: We use the picking baskets at Florence Villa almost entirely.

Mr. McKay: Our experience has been that the most satisfactory work has been done with the picking sack. The sack that is open at the bottom, which the pickers can let down into the bottom of the box. Also a sack which has a closed mouth, or almost closed, into which they cannot drop the fruit. The main trouble with the basket is, it has a wide mouth, and it is a temptation to shoot the fruit down from the limb into the basket. On the whole, the sack has proved the most satisfactory, not only in our work, but in the experience of most growers.

Rust Mite: Is there any way to decrease the injury to oranges from this insect by fertilizing? Are there any insects which feed on the rust mite; where can they be procured, and what are they?

Mr. Hume: Dr. Berger, can you tell us anything about that?

Dr. Berger: No, I can't. I know of no method of fertilizing. You might leave that to Mr. Yothers here.

Mr. Yothers: I have never found any parasites of the rust mite, and I have been making observations about a year and a half. Maybe some will turn up after awhile.

Mr. Hume: The reply to that question is that so far there is no known enemy to the rust mite which holds it in check.

Mr. Carroll: So far as I know, there

is no parasite feeding upon the rust mite, and I have been following it for a good many years. I have seen the rust mite since I have been in Florida; they have been here ever since the first Chinese orange was grown, and I have never been able to find any parasite.

So far as using fertilizer, I have been following that line some, too, and there is absolutely no fertilizer to my knowledge, nor to any fertilizer man's knowledge, that we can put on the ground that will destroy the rust mite.

Question: What is the cause of die-back in an orange or grapefruit tree? Can it be remedied, and how?

Mr. Hume: I am sure that question will be answered during the later discussions, but I am calling it up now.

Mr. Stevens: At present, we do not know the cause of die-back, but it can be controlled in a measure by non-cultivation.

Mr. Carroll: Mr. Stevens, do you know of any case where a sour orange root has had melanose or foot-rot—I mean foot-rot?

Mr. Stevens: No, I don't know of a case.

Mr. Carroll: Can you tell us why the sour orange, and almost the grapefruit root, is immune to that, and the Chinese or Mediterranean orange is liable to that disease?

Mr. Stevens: No, I don't know that I can tell that. The sweet orange is the more susceptible, though just why it is, I don't know.

Mr. Hume: I do not think, Mr. Carroll, that question can be answered as to why it is.

Mr. Carroll: I was just wondering if, in his research, he had arrived at any conclusion as to why the sour orange is immune, and the sweet orange susceptible.

Mr. Hume: That runs all the way through plants, and there is no explanation of it offered as yet.

Question: Has the idea that the keeping quality of oranges depends in part on the cured condition of the rind, been entirely given up by growers?

Mr. Skinner: I think the experiments of the department answer that question decidedly, and their experience showed that the quicker the fruit is put into the market, the better it was. You can look at the maps given at other meetings, and the percentage of decay increased a great deal faster than the time. If you hold it forty-eight hours, you get a good deal more decay than if you hold it twenty-four hours, and my experience has been that the sooner you get it off, the better you are off.

Mr. McKay: That has been our experience, invariably.

Discussion on the Immature Citrus Fruit Law and the Standard

WEDNESDAY MORNING

Mr. Hume: This afternoon I am going to call up the Green Fruit Law. I always try to avoid tough spots—maybe this is one of them, but we shall try to arrange it so that it will not be. The point here is that the Legislature is anxious to get an expression from this body with regard to the Green Fruit Law and the Standard, and to get it as soon as possible, because as I understand it the committee wants to report on it at an early date.

I am sorry to do this—it was not on the program, and I would rather you had heard, before the discussion of this law, the interesting and thorough talk we are to have on Thursday night—I refer to the illustrated talk of Professor Collison, who has made about 600 analyses of fruits this season.

Now, I want to throw out a hint at this time. Your presiding officer does not intend to spend the whole afternoon on this subject. Of course, you can overrule me if you like, but I am telling you that I do not wish to give the whole program to it. I shall try to give sufficient time to get a fair expression of opinion, and that is all.

WEDNESDAY AFTERNOON

Mr. Hume: It was our purpose to take up at this time the question of the

Green Fruit Law. Since we adjourned, at noon, something has developed on which I believe it is in the interest of the Society to act, and act quickly. I am going to ask you to bear with me while I call up the report of the Legislative Committee. It was to be tomorrow afternoon, but tomorrow may be too late.

I will ask Mr. Gillette to present the report of the Committee at this time.

Mr. Gillette: *Mr. President, Ladies and Gentlemen:* The reason for calling up this report at this time will be apparent when I read you the telegrams and letters I have in my possession.

I wish to say in this connection, that this Crop Pest Bill was brought out at our last session in Miami. The bill was read and had the endorsement of the Society. The Committee on Legislation was requested to see that this bill was put through this session of the Legislature. As chairman of the committee, I called them together and we have had several conferences, and we have done all we could to get the bill into the House and Senate. Senator Drane undertook to put it through the Senate, and the Representative from Hillsborough promised to introduce it in the House. Whether it has been introduced in the House I have not heard, but it was introduced in the Sen-

ate, and I have received a telegram from him as follows:

"Tallahassee, Fla., April 29, 1913.
"M. E. Gillett, care Putnam Inn, DeLand, Fla.

"Committee on Agriculture in Senate unanimously opposed to Crop Pest Bill. Have asked them to withhold report and keep bill in committee for few days to give you chance to appear before committee. Better send some one here to take charge of it. Please advise me quickly.
P. J. Drane."

Today at luncheon time our President handed me the following letter:

April 29th, 1913
Prof. H. Harold Hume.
DeLand, Florida.

Dear Prof. Hume:—

Drane bill relating to "Pests" was referred to Committee on Agriculture in the Senate, and on yesterday this Committee reported unfavorably upon this bill; however, I have succeeded in having it recommended and the Committee is now reconsidering same. It is the opinion of the Committee that the bill should be reported unfavorably, and unless the matter is brought more clearly before them, I fear your measure will receive an adverse report. This Committee is composed of Senator J. B. Wall, Chairman, and Senators J. C. Culpepper, W. H. H. McLeod, J. B. Roddenberry and L. W. Zim. Unless your Association gets in some good work at once I fear your measure is defeated. Senator Wall told me that the Committee was unanimous in reporting unfavorably. This bill will not remain out with them

but a short while, and I would suggest that you arrange at once to have your measure cared for. Senator Drane is anxious that the measure have full hearing before definite action is taken. A strong wire to the Committee would likely have its weight; and in the mean while I shall continue to do what I can.

Sincerely yours,
Max M. Brown.

Realizing that this condition of affairs existed, and that there was danger that the bill would not go through, the committee met this morning and drafted the following resolution. We ask the Society to endorse it. We wish to telegraph it to them immediately. That was the reason for bringing this report up at the present time:

Whereas, the State Treasurer's Report shows an annual profit exceeding seventy-five thousand dollars in the sale of feed and fertilizer stamps, and this income is made possible by the purchase of feed and fertilizer used by agriculturists and horticulturists; and

Whereas, there is now pending before the Legislature a crop pest Senate Bill No. 218, which carries with it an appropriation of twenty thousand dollars annually, and the horticulturists of the State believe that they are entitled to the protection promised them in this crop pest bill, in view of the injurious insects which are likely to be brought into this country and which may entirely destroy the citrus and other fruit industries, and feel that they are warranted in asking at the hands of the Legislature this small

portion of a fund which the horticulturists and agriculturists have created; therefore be it

Resolved, that this Society heartily indorse this bill and urgently request its passage.

M. E. Gillett, Chrm.
G. L. Taber,
Isaac A. Stewart,
O. W. Conner.
E. O. Painter.

Mr. Gillette: I have another short report to make. Believing that this matter of legislation was coming up, the committee present the following:

DeLand, Fla., April 30, 1913
To the Florida State Horticultural Society in Convention Assembled:

Your Committee on Legislation after due and proper consideration of the Green Fruit Law, would most respectfully request that we would recommend that Chapter 6236 of the Laws of Florida entitled "An Act to prohibit certain dispositions of citrus fruits which are immature or otherwise unfit for consumption, and the misbranding of citrus fruits" be retained upon our Statute Books without amendment.

Most respectfully submitted,

M. E. Gillett, Chrm.,
E. O. Painter,
Isaac A. Stewart,
G. L. Taber,
O. W. Conner,

Mr. Prouty: I wish to make a motion that we adopt that report. If you please, I want to make an explanation. I want to explain to some of the people why I am making this motion. I was sent up here to make a fight to get some-

thing that would actually stop the traffic in green fruit. Now, the members of the committee, and also many members of this body, contend that if the law as it stands is honestly enforced, the shipping of green fruit will be suppressed. I have come to agree with them. That is why I make the motion to adopt the report of the committee to retain the citrus fruit law as it is.

Mr. Hume: Before putting the motion, or throwing it open for discussion, I want to make a few remarks, if you will permit me, and those will be in relation to the handling of this matter.

Now, in handling this matter of the Green Fruit bill and its workings, I am exceedingly anxious it be handled in two sections. One has now been presented, and if there is any discussion, I want the question of the Green Fruit Bill as it now stands, to be kept actually separate from the question of standards.

I shall now call on Captain Rose to make a talk somewhat along the lines he made yesterday, explaining what has been recommended in the way of a bill. I will give him ten minutes to talk, and shut him off at the end of that time. I am then going to give Professor Collison, of the Experiment Station, about five minutes; then I am going to shut him off. Then I am going to throw the matter open for discussion, and a three-minute talk is the limit. We shall have three-minute talks until a fair expression of opinion is had. We shall have those talks in rotation; I mean by that, if a man is opposed to a certain standard, he shall have three minutes to say why, and

this will be followed by a talk from a man who is in favor of a standard. There should not be two successive talks for the bill followed by only one against it, and vice versa. Then when it becomes apparent to me, as your presiding officer, that a fair expression of opinion is had, we should be able to close the discussion and put the motion.

Mr. Prouty: Please explain to me why this standard bill was not handed to the Committee on Legislation instead of being brought into the meeting to discuss it. It puts us all at sea. I confess I do not know anything about it.

Mr. Hume: Then it will be a good thing to say nothing, Mr. Prouty. But, seriously, answering your question, Mr. Prouty, I cannot tell you why it did not go to this committee. I have no control over the matters when they have once been passed upon by the Society or by a committee, and I cannot tell you why it was not handled that way.

You have heard the resolution to the effect that the Green Fruit Law stand as it now is on the statute books. The motion has been seconded, and it is now open for discussion, if you desire to discuss it.

Mr. Hume: You have heard the resolution as read. Those in favor signify by saying "aye;" opposed "no." The motion is carried.

Captain Rose: Mr. President, Ladies and Gentlemen of the Horticultural Society: This matter has been thrashed out before this Association ever since I have been connected with it. Immature citrus fruit, or the shipment of it, has vexed the orange grower for that length

of time, and longer, particularly when the crop reached five million boxes, and was more difficult to dispose of than when we had only a few hundred thousand.

The present bill which you have just endorsed was introduced by the orange growers; your State Legislators had nothing to do with it. It is not properly a subject for the Agricultural Department. It is no more the duty of your Agricultural Commissioner to enforce this Green Fruit Law than it is the duty of the Superintendent of Schools. It is a prohibitive law, to prohibit the shipment of immature citrus fruit and, like other prohibitive laws, such as the one in regard to intoxicants, it does not define what an immature fruit is, any more than the prohibitive law in respect to intoxicants fixes the percentage of alcohol. It is a matter of fact to be established by a jury whether a certain percentage of alcohol which would intoxicate Brown and would not intoxicate Jones, is an intoxicant or not.

Now, you want a standard established. You appoint a Commission consisting, I think, of capable men (barring myself) to report, and you adopt the standard. There was a great deal of criticism, probably just; it was said that the standard was adopted by a certain clique. I think there was a very representative body of men at Gainesville, also recently at Tampa, and that the orange grower is fairly represented here.

I had suggested in a communication what other men and I had considered a fair standard, using an acid test, which I believe is the only one that can be fair-

ly used. I communicated with the convention of orange growers, sent them the result of my labors and that of others, and received this wire from the convention as a whole, saying that my recommendations were accepted, with two alterations; that instead of 1.25 per cent. acid for oranges and 1.60 per cent. acid for grapefruit, they had amended my suggestion to 1.30 for oranges and 1.75 per cent. acid for grapefruit, as follows:

"The Florida Fruit and Vegetable Growers' League, in convention assembled, instructed the undersigned committee to advise you of the receipt and endorsement of your communication regarding supplemental legislation in the Green Fruit Law, and the convention voted one amendment to your suggestion; namely, the acid content to be 1.30 per cent. for oranges, and 1.75 per cent. for grapefruit. With these two changes you are authorized to proceed as suggested by you. Please acknowledge receipt and verify your understanding of this wire.

(Signed)

"FRANCIS W. PERRY,
"A. H. BROWN,
"L. B. SKINNER."

The chairman of that meeting informed me yesterday that this was an authentic communication. Following along the lines of these instructions, I had prepared a bill and submitted it to one of our most capable Legislators, Mr. Worley, of Dade. Mr. Worley's constituents had instructed Mr. Worley to prepare a standard along the lines of an acid test, but eliminating the date for shipment of grapefruit, claiming they had grapefruit big and ripe and ready to ship before the first of October.

I had provided for that condition in the bill. I will read the first section of that bill. I brought with me here enough copies of the bill to supply every

member of the Society, together with a pamphlet showing how I had reached my conclusions.

I will read the title:

"AN ACT to Define Immature Citrus Fruit; to Fix Standards for Mature Citrus Fruit; to Place the Execution of the Immature Citrus Fruit Law, Chapter 6236, Laws of Florida, Within the Jurisdiction of the Department of Agriculture, as Provided for In the Pure Food and Drugs Law of the State of Florida; to Provide for the Appointment of a State, and Four Local Citrus Fruit Inspectors, Fix Their Compensation and to Appropriate the Necessary Funds for the Execution of This Law."

That is the title. It does not interfere with the Green Fruit Law. It is simply as I said—a standard. I am only sorry we have not such a standard for intoxicants. It is the crux of the whole bill.

"Section 1. That all oranges or grapefruit that are the result of bloom occurring during the calendar year shall be defined as immature citrus fruit, when detached from the tree prior to October first of the year in which the bloom occurred, which produced the fruit.

"That from October 1 to December 31 of each year all oranges grown from the current calendar year's bloom, the juice of which contains more than 1.30 per cent. by weight of acid, calculated as crystallized citric acid, and all grapefruit grown from the current calendar year's bloom, the juice of which contains more than 1.75 per cent. by weight of acid, cal-

culated as crystallized citric acid, shall be considered as immature.

"That oranges or grapefruit, the result of a bloom occurring during the previous calendar year, shall be excepted from the above standards."

Now, that is the bill. The application of it is only a matter of detail. All the oranges that bloomed last year, in 1912, would be shippable now. They would not be subject to any inspection. But all the oranges blooming since the first of January would be considered immature until the first of October; after that they would be subject to the test.

Now, I will read the balance of the bill; I can do it in a minute.

Mr. Hume: I am afraid you will not have time, Captain Rose. Your time is almost up.

Mr. Thompson: I move that his time be extended ten minutes more. (Motion seconded and carried.)

Mr. Hume: You have ten minutes more, Captain Rose, and I am going to call you when the ten minutes is up.

"Sec. 2. The inspection, examination and analysis of citrus fruit shall be made by the State Chemist of Florida, or under his direction or supervision. That the general provisions, rules and regulations of the Florida Pure Food and Drugs Law, approved June 5, 1911, Chapter 6122, Laws of Florida, and amendments thereto, shall apply to the execution of this law, when not in conflict with the same.

"Sec. 3. That Inspectors shall draw samples for analysis in the presence of the owner, agent, manager or custodian

of any packing house, car, or other place where oranges or grapefruit are gathered or packed for shipment. Two samples of twelve average oranges or grapefruit, each fairly representative of all the fruit at the time being inspected, shall be drawn by the Inspector, assisted by either the owner, agent or custodian of the fruit.

"That one of the samples so drawn shall at once be tested, or analyzed, by the Inspector in the presence of the owner, agent, or custodian of the fruit, in the manner herein provided. Should the test show, in the case of oranges, that the juice contains more than 1.30 per cent. by weight of acid, calculated as crystallized citric acid, the fruit shall be considered as immature. Should the test show in the case of grapefruit that the juice contains more than 1.75 per cent. by weight of acid, calculated as crystallized citric acid, the fruit shall be considered immature.

"Oranges or grapefruit showing less than 1.30 per cent. or 1.75 per cent. respectively of acid, calculated as crystallized citric acid, shall be passed as mature. *Provided*, That should the owner, agent or custodian demand an analysis by the State Chemist the duplicate sample, drawn in the presence of the agent, owner or custodian, shall be sent by express or parcel post prepaid to the State Chemist, the sample to be identified and verified by the signatures of the owner, agent or custodian and the Inspector, the fruit in question under investigation to be withheld from shipment until the re-

sult of the analysis by the State Chemist is received by wire or otherwise.

"Sec. 4. The methods of preparation of samples for analysis and application of field tests shall be as follows: Twelve average oranges or grapefruit fairly representative of all the fruit under consideration, selected as prescribed in Section 2, shall be peeled, cut across segments, the juice extracted by an ordinary lemon squeezer, strained through cheese cloth into a porcelain bowl. A measured quantity (10 cc) of the juice shall be gradually mixed with an exact equal quantity (10 cc) of the standard alkaline solution properly colored with an indicator. Should the mixture change to orange color, the fruit has more acid than the standard permits, and is therefore immature. If the mixture remains pink in color, the fruit is mature. The standard alkaline solution shall be furnished to Inspectors by the Chemical Division of the State of Florida, with full directions for its use, all tests and analyses to be made according to the methods of the Association of Official Agricultural Chemists.

"Sec. 5. The Governor shall appoint on the recommendation of the State Chemist, a State Citrus Fruit Inspector. He shall be a competent analyst, capable of instructing the local Inspectors and orange growers throughout the State how to apply the field or house tests; to manipulate the apparatus and determine the immaturity or maturity of citrus fruit thereby. His salary shall be \$1,-800 per annum, payable quarterly. His traveling expenses shall not exceed \$100

per month while in the performance of his duties, and shall be paid on properly detailed vouchers.

"Sec. 6. The Governor shall also appoint four Local Citrus Fruit Inspectors, residents of the orange growing districts, on the recommendation of the orange growers of their respective districts. They shall be under the supervision, direction and instruction of the State Chemist of Florida. Their term of office shall be from September 1 to December 31, of each year. They shall take the usual oath required of State officers for the faithful performance of their duties. They shall be paid a monthly salary of \$100 per month and their reasonable traveling expenses while in the performance of their duty, not to exceed \$100 per month.

"The Governor may, at his discretion, on the recommendation of the State Chemist, establish a temporary branch of the State Laboratory, at some convenient central citrus packing and shipping point for the months of September, October, November and December of each year, and upon the recommendation of the State Chemist, appoint an Assistant State Chemist, Citrus Fruit Analyst, who shall be a competent analytical chemist.

"He shall receive \$200 per month for the months of September, October, November and December. The necessary apparatus, chemicals and reagents for the analyses of citrus fruits shall be furnished by the State Chemist.

"The State Chemist, Assistant State Chemists, and the Food, Drug and Fertilizer Inspectors of the Chemical Divis-

ion, shall be ex-officio Citrus Fruit Inspectors, and may be detailed by the State Chemist, to the citrus growing sections during the period between September 1 and December 31, to inspect and instruct local inspectors and growers, if in his judgment, it be necessary.

"Sec. 7. In the performance of their duties, Inspectors shall have free access at all reasonable hours, to any warehouse, packing house, railroad depot, or car, where citrus fruits are sold, prepared for sale or stored for shipment, for the purpose of examination or inspection, and the drawing of samples of such citrus fruit for the purpose of ascertaining if they be mature and fit for shipment or immature and unfit for shipment. If such access be refused by the owner, agent, manager or custodian of such premises, the Inspector may apply for a search warrant, which shall be obtained in the same manner as provided by law for the obtaining of search warrants in other cases. The refusal to admit an inspector to any of the above mentioned premises, during reasonable hours, shall be construed as prima facie evidence of violation of Chapter 6236, Laws of Florida.

"In calling for and taking samples of citrus fruit, the Inspector shall tender to the owner or agent, the local market value of the sample.

"Sec. 8. The sum of ten thousand dollars, or as much thereof as may be necessary, is hereby annually appropriated from the funds arising from the inspection of feed stuffs and fertilizers, to carry out the provisions of this Act, and the same is made immediately available.

The Comptroller is hereby authorized and directed to pay the same only on detailed warrants, approved by the State Chemist.

"Sec. 9. All laws and parts of laws in conflict with this Act are hereby repealed.

"Sec. 10. This law shall take effect, sixty days after its approval by the Governor."

Now, gentlemen, personally, I am entirely indifferent. The bill will entail upon me a very large responsibility, which I do not intend to shirk, and a great deal of work.

It is made along the lines as suggested by your commission, whom I consider particularly capable men, and I will say to you as a scientist, a chemist, and a practical man, that an orange or grapefruit which contains 1.30 and 1.75 of acid, respectively, may be fit to ship, but it is not fit to eat.

Mr. Prouty: I have asked for information on this bill, Mr. President, and you told me if I had no information to shut up. You told me you didn't know why it had not been sent to the Legislative Committee. Now, from what we have just heard, I think we have a right to know something of this bill, and we should have intelligent information about it.

Mr. Hume: The information has been given by Captain Rose, and the whole matter is open for discussion.

Mr. Sample: I move the adoption of the bill just read.

Mr. Sadler: I second that motion.

Mr. Prouty: I move, Mr. President—

Mr. Hume: There is a motion ahead of yours, Mr. Prouty. You can make an amendment, but not a motion.

Mr. Prouty: I make an amendment, then, that the whole matter be referred to the Committee on Legislation, and come up in its regular order. Have I a second to that amendment? That the whole matter be referred to the Committee on Legislation, the same as other matters. We are entitled to know all about it. There is no reason why this thing should not be treated in the regular way, and not sprung on us this way.

Captain Rose: I hope that the amendment will not prevail. I am speaking of the amendment, and I have the floor.

This matter has been thoroughly thrashed out before the present committee. The bill has been ready; Mr. Prouty has had a copy of that bill. I brought them yesterday and announced that there were several hundred of those bills, and every man in the audience could get a copy. Mr. Prouty is thoroughly conversant with the bill. The Legislative Committee desired to hear from this organization, and they adjourned their session subject to your action. The matter has been discussed on these streets, pro and con, discussed before the Legislative Committee; the President this morning announced that he would introduce the subject to the whole Association. We are really sitting as a committee at present. I hope to hear it thoroughly discussed: You may want to amend the bill in some details. The Legislature is awaiting your action.

Mr. Sadler: I attended the meeting at Tampa, where we discussed this same

law. At Tampa, the bill was endorsed almost unanimously. We had a regular love feast. It is clear to my mind that the amendment should be, and will be, voted down. I have nothing to say against the Legislative Committee or any other committee, but as has been stated, this is a committee of the whole, and every man knows what is going on and the reason for it. I hope the gentleman will withdraw that amendment and let harmony prevail. It will leave things in a better shape.

Mr. S. J. Carlton: It is unfortunate that the representative growers of the State of Florida should come here to consider a proposition that is of more vital importance than anything else, perhaps, and give them only three minutes of time. There are people here who ought to have all the time there is to inform themselves. It would be absolutely unfair to force him to make his remarks in a few minutes on a proposition that means more than anything else. On this proposition depends whether we are going to grow oranges for a commercial proposition or for ornament. We are here to see if we cannot make our orange groves represent more in the future than we have in the past.

We have listened with pleasure and profit to the ideas of culture and proper taking care of the groves, but when it comes to the marketing of our products, if we cannot do it when we can make money for ourselves, what use is it to grow them? There is no other orange growing country in the world so handicapped as Florida. The markets will be

open to our products, and they will be supplied by people outside.

If there is anything here, it is the interest of the man who is producing the orange, and where will you be when you have put yourself where you can be dictated to by a few individual growers. Let us have all this thrashed out, and if it takes a week to discuss it, let us do it intelligently. There are very few people who have thought it over, and I am appealing to you not to be impatient over this proposition, and not railroad it through too quick. Be fair, and you will not regret it; but if you hurry this proposition it will be the most unfair thing that I can conceive of. In the name of fairness, let us discuss it until we thoroughly understand it.

Mr. Gaitskill: Well, our friend seems to be very much worked up over it. I can't really understand, myself, how any man interested in oranges can fail to understand the bill thoroughly, if he is at all up to the times, and keeps his eyes open, and his ears, too. It seems to me that if a man's thoughts are clear and concise enough to be of value, he ought to be able to express himself pretty well in three minutes. The bill has been—

Mr. Hume: This Green Fruit Law is not a part of our program. You can put it to a vote.

Let us settle this right now; Mr. Gaitskill, I will let you have the floor in a moment. I shall give every man who wants to speak, the opportunity to do so. I can sit here just as long as you can. I have no preference in this matter; I am not being dictated to by anybody, and I defy anybody to prove it.

I do believe this matter ought to be brought to a conclusion in a reasonable length of time. It is done in every legislative body, and I intend it to be done here, unless you vote me down.

Mr. Carlton: Would you be willing to sign an instrument before reading it?

Mr. Hume: Mr. Gaitskill has the floor.

Mr. Skinner: I wanted to move that we lay the whole thing on the table, but—

Mr. Gaitskill: I just simply wanted to say that anyone who has been trying to inform himself, ought to be pretty well informed. It was up in Tampa and endorsed by both conventions. I don't think the matter should have very much discussion over it. We all know, or *ought* to know, what it is.

Mr. Stewart: What side are you talking on? I want to enter my protest against this bill. I want to—

Mr. Hubbard: I want to rise to a point of order; a motion was made to lay on the table.

Mr. Hume: As I understand it, Mr. Skinner did not make a motion; he said he wanted to make it, so there is no motion before the house.

Mr. Stewart: When this proposition is up for discussion, I want to enter a protest. I want the privilege of being heard and giving my reasons for entering a protest.

Mr. Glass: I would like to know whether it is customary in this Society to refer matters to any standing committee. If it is customary, I think it had better go to a committee.

Mr. Cline: Mr. Chairman, I make a motion to give each man six minutes.

Motion seconded and lost.

Mr. Stewart: Mr. Rose says, according to this test, an orange may be fit to ship but not fit to eat. For that reason I am opposed to it. The old law says oranges that are immature and unfit to eat, shall not be shipped.

Now, who talks about a standard for intoxicating liquors. We used to hear talk about cider not being an intoxicant on account of its small content of alcohol. In a case I had once I told the jury that when a man could take enough stuff into his stomach to make him drunk, it was an intoxicant. The case went to the upper court and was affirmed.

Any man who ships immature fruit unfit for consumption is guilty of a violation of a law. You have justices of the peace before whom you can try these cases as they arise, in every precinct, and you can go before them and the witnesses can tell whether it is fit to eat or not. Any orange grower in this house can tell when an orange is fit to eat.

Now, all this about "acid test"; we haven't got time to learn all that. If we had grown up with it in the schools we might know when an orange was 1.30 per cent., but we don't know about it now. Let our children learn it; the orange growers have no time for such tom-foolery. It seems ridiculous that we have to send clear to Tallahassee to have some chemist up there say that our fruit is fit to eat. If this is made a law, every man will have to be a chemist. I would not know any more about going to work by rule and proving that my fruit was

fit to eat than I do about the Greek language, and if I were tried the gentlemen of the jury wouldn't know anything about it any more than they did about the Greek language. According to this, every man will have to know something he does not know. In time we may know, if we take it up in the primary school. I suppose Mr. Rolfs and Mr. Rose can do it.

If you take a hundred orange growers and ask them to prove by the method described in this bill that an orange is fit to eat, I do not believe one can do it, but let them try it their own way, and every one of them can tell you when an orange is fit to eat. It takes an expert to tell you when the orange is fit to eat, and you know and I know that the biggest fools in the world are what we get when we have to take expert testimony.

The common, ordinary man who has his sense and ordinary knowledge, who has not been spoilt by too much information, like so many who look wise and say much and know little, can usually give more information than all your experts; at least, that has been my experience with expert testimony.

I am an orange grower myself, and nothing else; I am not a broker; I am as free as the water that runs off the hill, and the interest of the orange grower is my heart's delight, and I must state that I object to being hampered in the exercise of my rights as a shipper of fruit, and I believe everybody knows when his fruit is fit to eat. Let us have the law as it is passed; let us have it merely as it stands. Let us have the law so that your Justice of the Peace, before

whom and your State's Attorney, and who try the cases in violation of the law, will be able to handle it intelligently, instead of having to rely upon a chemist's test to enforce the law.

Mr. Hamlin: It seems to be a very simple matter. We have adopted a law which the Supreme Court has held to be good; not only this organization, but every other organization of citrus growers in the State of Florida have adopted and sanctioned the same thing. A part of that bill says that immature citrus fruit shall not be shipped. Now, here comes a bill that is introduced before us now, to define what immature citrus fruit shall be—that is all that it amounts to. Now, then, it seems to me that it is inconsistent of us, after adopting a bill which says that, to vote against a bill that says you shall provide some test for it to see what condition a citrus fruit is in. It seems to me it is inconsistent—I don't know whether I am for or against the bill, but it seems to me to be a common-sense view to furnish some standard of some kind. Of course, Mr. Chairman and gentlemen, you all know how difficult it is to frame a bill that will pass the test of court.

The bill that we have voted in favor of endorsing has passed that test, both in the Circuit Courts and in the Supreme Court of this State, and those very same parties who believe just as Judge Stewart does, are testing it, and propose to go to the Supreme Court of the United States on the ground that no test is provided in that bill. That is the "nigger in the wood pile."

Mr. Chase: Judge Stewart stated, I think very truthfully, that if we adopt chemical standards defining citrus fruit maturity, we would throw the question into the hands of experts.

When I was in Washington, on the Florida rate case, we had experts on the side of the railroad, who proved they were losing big money on the fruit they handled out of Florida. The attorney who represented the Association, turned to me and said: "You know, liars are divided into two classes—liars, damn liars and experts."

I think it would be a great mistake to adopt a chemical standard defining what is immature citrus fruit. When decision 133, of the Pure Foods and Drugs Act, was passed, I wrote to Dr. Wiley and asked him to please let me know when an orange ceased to be immature and became mature. He wrote back: "I cannot do it—nobody else can." He advised me to go to Washington, which I did, and appeared before the Pure Food Commission and we talked the matter over the entire morning, and they said, "You people will have to decide; there is no chemical test possible, because there are other elements besides citric acid which go to make the mature fruit. You must take into consideration the elements which combine to make the flavors we enjoy."

The California people have to operate under Decision 133. I do not know whether the growers would like to hear it or not, but it has a clause in there providing for certain varieties which mature earlier than other varieties, although the

peel remains green, so that the greenness does not constitute immaturity.

Florida has to meet competition. Florida growers, I take it, are not in business for their health. They are in business for results. They plant trees and cultivate them and go to great expense to get a profit out of the business. They are industrious and are doing all they can to lengthen the marketing season. Now, by adopting Mr. Rose's bill, they are going to work and voluntarily shortening our marketing season.

Mr. Rose: I rise to a point of privilege. It is *not* "Mr. Rose's bill;" it is the bill which I was directed by the orange growers to prepare, so that a standard might be set. This is the result of the work which I was directed to do. It is not "Mr. Rose's bill" at all.

Mr. Chase: Mr. Chairman, I understood him to say it was his bill, and—

Mr. Rose: I did not say it was my bill. It is the bill of the citrus growers of Florida, directed by them for me to prepare.

Mr. Chase: I apologize to Captain Rose. I talked the matter over with him and understood him to say he drew up the bill after correspondence with certain other persons.

Mr. Rose: I said, after instructions of the citrus growers. I prepared this bill after being instructed to do so by the convention at Tampa, and after it had been discussed at the convention at Gainesville, I received a telegram signed by three members appointed for that purpose, to notify me they had accepted it, with certain modifications.

Mr. Skinner: That brings me into the

discussion. Don't sit down, Mr. Chase. I am not going to take but a minute.

I want to say that yesterday, before a committee of twenty, Mr. Rose said that he had written this bill out at 1.25 instead of 1.30, as instructed by the Tampa Convention, and I think that was one of the reasons Mr. Chase thought it was Mr. Rose's bill.

Mr. Chase: I was speaking, I believe, of the competition that Florida oranges have to meet, and the inadvisability of passing a bill or making a law placing the industry under the control of Captain Rose's department. In the first place, this coming fall, we will have no competition from California in the way of Valencias. When the California fruit is sold out, the prices are high and there is a demand for Florida oranges just as soon as they are fit to eat; that is, are sufficiently mature to make them palatable. When the California Valencia crop becomes large, the prices fall in inverse ratio to the supply of fruit, and the Florida oranges are unprofitable when shipped early.

This year, the crop is light, and we have an elegant opportunity, just as soon as our fruit is mature and fit to go into the markets, to supply them. The markets will be bare and will take a large supply of fruit. If it is necessary to wait until these markets are supplied, instead of 80 cents profit on a box, you will have to be content with 28 cents. We can expect to see large quantities of Valencia oranges which are no better to eat than ours would be, brought into New York, Boston and other ports which we might supply. Jamaica has never been

able to come into this country since we have had a large supply of Valencias. Arrangements are being made now in Jamaica to send an enormous supply into our ports; people are going there who know how to handle it; machinery is being installed, and transportation is lower from Jamaica than we can get here. Jamaica oranges are going to get into New York and the other centers, and they will furnish the supply that Florida could take care of.

I would be very sorry to see this Society put itself on record as endorsing a measure that would so hamper the industry. I believe we can handle our crop just as well as California can handle her crop. California has no restrictions.

I have here a copy of an opinion rendered by Mr. Call to the effect that oranges, when the peel turns to yellow all around on the tree, are mature because they were colored a good orange color, and could go into the market. I think the rules and regulations that govern California should govern Florida, and I would like very much to have the matter discussed from a practical standpoint and all personal feelings put aside. It is not wise to vote for a matter that you will be sorry for having enacted into a law.

Mr. Cline: We are all in this orange industry. I am speaking against this bill because of the menace it is to the orange growers' interest. We should speak and vote against it.

We are all in favor of handling the situation to the very best possible advantage. Nobody wants to put green fruit on to the market that will make the mar-

ket turn against it, and the trade turn against it.

Last year they brought me a paper to sign that I was opposed to 7 to 1. I said, "I am not going to sign that paper, because I don't know what 7 to 1 means." I later learned what 7 to 1 meant. It meant disaster to our industry.

Next fall, when California is going to be out of the deal, the trade will be clamoring for oranges at a handsome price. California will not have the supply. The foreign producers will flood the market with their green fruit, and we will be sitting here with our hands tied. I have prepared a chart and had it printed. I will have to look at it to become familiar with it. I have shown here when we could ship the fruit last season, by the State Chemist's tests.

In Dade County, October 24th was the first day on which our best oranges could be shipped. I said last year I was opposed to this thing. I clamored for a green fruit law, but when our fruit was held up when it was good enough for any trade, and any trade was glad to get it, it was held up until October 24th. That is why I am opposed to it. It hampers our industry.

I am in favor of some kind of a test, but not the 1.30 acid test. Last year it did not reach that standard until the 30th of October. In Hillsborough County, the first date the fruit reached maturity, according to your 1.30, was December 21st; Lake County, November 16th; Lee County, October 18th; Lee County, November 8th; Manatee County, October 18th; Orange County, November

18th, December 20th and November 29th.

Now, gentlemen, when you go to your groves in this State and pluck the best fruit, and personally you know the trade is clamoring for them; then are you going to endorse the proposition that is going to tie the hands of every one of us?

You have the absolute facts; they are here on this chart.

Mr. Wakelin: They are not absolutely correct, for fruit was shipped from Lake County that came up to the test on the 10th of October.

Mr. Cline: That may be true, all right. There were many tests in my county, so far as the State Experiment Station goes.

I did not know anything about this when it came up for discussion last year. Today I do know as a practical orange grower, if you put it at 1.30 per cent. you will hold our very best fruit up until these dates and hamper our industry more than almost anything else could.

Mr. Hume: This is no time for a heated discussion; let us get down to a cool basis.

Mr. Wakelin: I don't think you can make any capital out of the data you show there as from Lake County. I was the man who shipped that fruit. I shipped samples to the station during the whole period of examination, and I can say now from the condition of that tree and what happened to it, that it was abnormal. The fruit never colored up as the rest of the fruit in the grove did. It was just a "happen-so."

Mr. Henry: I want to read you a few figures that may influence some of

you a little bit. I will give the name and address of the grower, the variety, the date and the acid at the time of making the test.

These are from Lake County:

E. B. Peters, Leesburg; Parson Brown; September 20; 0.78.

Johnson & Company, Leesburg; September 31; 1.01.

E. H. Mote, Leesburg; October 1; 1.16.

R. L. Collins, Umatilla; October 1; 1.12.

R. L. Collins, Umatilla; seedling; October 31; 1.06.

A. H. Souter Astatula; October 31; 0.73.

C. Edgerton, Mt. Dora; November 16; 1.29.

Woodlea Co., Tavares; December 27; 1.27.

Mr. _____: I would like to know if the statistics the gentleman read represent all of the tests they made or merely those below the required test.

Mr. Henry: Those below 1.30.

Mr. _____: I would also like to ask what percentage of the total tests they made were below 1.30 per cent.

Mr. Henry: I can give them to you approximately. These I am giving you were the miscellaneous samples. Over 75 per cent. were below 1.30 up to the first of October.

Mr. Stringfellow: I want to say in the beginning that I am looking at it from a selfish standpoint. I am looking out for my own grove. I am unfortunate enough to own a grove at present. It has been known for twenty years for early maturing fruit, like Mr. Dreka's. It

is a shell hammock grove, and they have been conceded to bear early fruit. Early in October the fruit colors up so that you can see the ripe oranges on the trees half a mile off. I went down there in October and November a dozen times and took samples for Mr. Chase to have analyzed, and begged him to ship it. He said, "I can get a good price for it, but I can't ship it for you. It has a good taste, but I am not going to violate the law." I took tourists down there, and they said they had never eaten better fruit; it had a fine color, but it was not anywhere near the test.

So I was left holding the bag, and it was not shipped until the latter part of December.

I am going to have a good crop this year, and I believe it will be palatable and luscious and pleasant to eat, but I do not believe it is going to come up to any acid test. I believe that, as in California, the color test should go.

I don't believe, either, that I am the only mercenary person in the hall.

Mr. Thompson: Mr. Chairman, you have let them break the rule you made. We have had four to one here lately. Now, I want to say one or two words myself.

We are not legislating only for this one year. Mr. Chase has brought forth the argument that we have a bare market this fall. We are legislating for the future. Perhaps another year the conditions will be different. It has also been said by the gentleman who just had the floor, that he could get money for his oranges in October, but he does it, perhaps, at the expense of the man who tried to

ship when his fruit was ripe in December.

What is the use of establishing a law and putting it on our statute books, without a standard to guide us? We have to have some standard, or else the law is a nullity. We have already voted unanimously that we want a law to prohibit the shipment of green fruit. I think anybody would be ashamed to vote against such a law being enacted. The law will be an absolute nullity unless we establish a standard. Therefore, this body should put itself on record as establishing a citrus test of 1.30 for oranges and 1.75 for grapefruit.

Mr. Mote: I have been in Florida thirty-two years, and had to do with oranges the past twenty-five. It seems to me we should go on shipping the fruit as soon as we possibly can, within reason. If you hold your fruit until late, around Christmas and after, you cannot find enough cars to take them or enough markets to take them. We don't want to have the same trouble we did last year about cars, every year.

There was a man once who was very sick. His physicians and friends kept asking what they could do for him, and trying to fix things up for him, and finally he said, "There is nothing you can do except to let me alone." Now, let us alone and let us have the law we have on the books.

Mr. Scott: Fruit from our section analyzed on October 24, 1.34 per cent. These oranges were shipped by the firm along with some Early Sweets which passed considerably within the test. The Pineapples were 1.30. The oranges on

November 1st in our packing house tested over 1.25, according to the chemist. Another sample of oranges from the same point passed less than 1.25. They were sent to Tallahassee.

Mr. Hume: I think we better vote on the amendment. The amendment is that the bill and the standard and everything concerned with the bill as read by Captain Rose, the bill which carries with it a standard of 1.30 for oranges and 1.75 for grapefruit be referred to the Legislative Committee.

(Amendment lost.)

Mr. Skinner: I attended the Gainesville convention, and in furtherance of harmony, which I desired, and to get a law which I thought would be observed—for there is no use of having a law unless you can enforce it—I say, in furtherance of harmony and to get a law that would be enforced and which we could all obey, with the statement of Captain Rose that an orange of 1.25 acid was not fit to eat, we adopted that makeshift, which has been the cause of a great deal of trouble. Now, right after the meeting adjourned, a gentleman whom I have not seen since, produced a bunch of oranges. The chemist took some of these oranges, cut them in half, distributed one-half to the audience and took the other half to make a test. The oranges would not stand the test. The audience tested the oranges, and they were good. I felt mighty cheap, because I knew I had advocated something that I thought would be all right, but I felt that the test from the chemical standpoint was a failure, and the only redeeming

feature was the date set and the color test.

Now, I do not really know what a 1.30 orange is. I know that the orange which was put up at 1.25 and would not stand the chemical test, was a good eating orange, and every man in that meeting will tell you so.

I agree that we should have some standard. I do not know exactly what it should be, but if you pass this resolution, it is very evident you will come a long way from passing it unanimously, and this resolution which represents a few growers; is it right for you to say to your brother orange growers, "You shall not ship your fruit until such a time?" I believe in being fair, and I believe in being fair to yourself, but I am not a believer in trying to force people to accept something that is not right.

At Tampa, some of the people who did not want this standard, tried to adopt a standard which was no good. I could not agree with them.

I am afraid of this 1.30 standard, because I think it is too small. I cannot go with Captain Rose, because I know that he once led me astray.

Mr. Rose: I rise to a point of personal privilege. At the Gainesville convention, you received the report of Mr. Hume, who was the chairman of the commission, Dr. Collison, and Professor Rolfs and myself, and they recommended that standard—not Captain Rose.

Mr. Skinner: I asked you personally if a 1.25 orange was fit to eat, and you said, "No, it is not." We brought an orange before that convention that was a good eating orange, and was sweet and

good, but it would not stand the test. I say that I cannot again follow the same leader.

I am afraid of this 1.30 standard. If this law is adopted, it is adopted for a long time. As my brother said, let him get them out of the way if they are fit; if not, don't let him ship them. Do you suppose a jury would convict a man for shipping fruit that was good?

Do you suppose people will ever convict a man under a 1.30 acid test, when his fruit is good to eat? They will not do it. Now, let us enact a law that no *decent* man will disobey. If you believe 1.30 is the right standard, you are just as conscientious as the man who believes 1.50 is the right standard, probably, and the man who will tell me 1.50 is right, I have as much confidence in as the man who tells me 1.30 is right.

Mr. _____: Make it 1.10.

Mr. Skinner: Now, why can't we adopt some middle ground which we can adopt conscientiously? It is very apparent you will never have the support of the 1.30, and a half resolution is no good resolution.

I move an amendment; I would rather put this at 1.50, but I will make an amendment to put it at 1.40. Now, you people come half way and put it at 1.40, and I believe we will have a law that we can enforce. The grapefruit is all right where it is.

Mr. _____: I second the amendment.

Mr. Nye: Since the meeting of that committee in Tallahassee, it was brought down to Orlando, and the present law or bill as before the house was given to

Mr. Massey. He, I believe, was the man who introduced the original bill in the Senate. At that time, he was censured. I understand that the chairman wrote to Mr. Massey asking for his personal views. Those views of his are to the effect that the present law as already enacted is a law that is good enough. I do not suppose I have a right to quote Mr. Massey, from the fact that he stated this to me personally, but I believe I have the right to say it before convention assembled here today.

A meeting of the growers in Orlando was held to discuss the matter. I have here a resolution that was passed and signed by different growers, and if this convention would like to hear it, I will read it, or I will give it to the chairman to be read:

"The undersigned orange growers and shippers met at Orlando, April 29, 1913, to consider the Green Fruit Bill now before the Legislature.

"*Resolved*, That it is the unanimous opinion that the proposed bill now before the Legislature is undecisive, and should not be passed.

"*Resolved*, That there should be an open market after November 1st.

"*Resolved*, That we recommend the adoption of an acid test of 1.60 for oranges.

"*Resolved, further*, That Messrs. Sperry, Nye and Drennan represent this meeting at the Florida State Horticultural Society, and present the resolutions adopted."

Mr. Prouty: I rise to make a motion—

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Mr. Hume: You cannot, Mr. Prouty; there is a motion before the Society.

Mr. Prouty: Then I wish to make an amendment—

Mr. Hume: You can't do that either; there is an amendment to that motion. You can make an amendment to the amendment.

Mr. Prouty: That amendment was voted down.

Mr. Hume: There is another amendment.

Mr. Prouty: My amendment is that this law be made to refer, or apply, only to citrus fruits to be sold or consumed in the State of Florida. My position is that we have no right to legislate for people outside of the State.

Mr. Hume: Is there a second to this amendment to the amendment?

Mr. _____: I second it.

Mr. Hume: The vote is on the amendment to the amendment, as made by Mr. Prouty; that the law as suggested shall apply to the State of Florida, to the people of the State of Florida, and not outside of it.

(Amendment to the amendment lost.)

Mr. Skinner: As I made the original amendment, I would like to have Captain Rose state his opinion on the subject.

Mr. Hume: As I understand it, Captain Rose is not expressing any opinion. Am I right, Captain Rose?

Captain Rose: You are right, Mr. Chairman. The bill presented contains no opinion, but is simply confirmatory of the work done by the State Chemist. I would like to hear from Professor Col-

lison; he is doing the same class of work along the same lines, at the same time. He said to me he would give the result of his examinations, if you wanted him to. I do not want to occupy the attitude of dictating to this convention what standard they shall fix. My attitude has always been, and will continue to be, that no one can fix a standard.

Mr. S. B. Wright: I move the previous question.

Mr. _____: I second the motion.

Motion carried, closing the discussion.

Mr. Hume: The vote now is on the amendment.

Mr. Stewart: I rise to a point of order. The proposition before the house was to adopt this bill. As I understand it, Mr. Skinner added an amendment to that bill. The bill was before the house as a whole, and the amendment to the bill would be out of order. The bill is before the house in its entirety. The previous question has been called for; the proposition was to endorse the bill.

Mr. Hume: The proposition is to adopt the bill with 1.40 per cent.

Mr. Rose: You can amend the bill at any time while it is being discussed, and before it is put to a vote.

Mr. Hume: Those in favor of the amendment as moved by Mr. Skinner, that the test be fixed at 1.40 for oranges and 1.75 for grapefruit, will signify by saying "aye." Contrary, "no."

(Amendment lost.)

Mr. Hume: The vote comes now on the original motion. The original motion carried with it an acid test of 1.30 for oranges and 1.75 for grapefruit.

Those in favor of the bill as originally read by Captain Rose will signify by saying "aye." Contrary, "no." It seems as though the "ayes" have it, but the chair is not certain. We will have to

take a rising vote, so that the Secretary and the Chair may count them.

(Motion carried.)

Mr. Hume: There are 104 in favor of the bill as read, and 65 against it.

Some Citrus Diseases

Prof H. E. Stevens.

Citrus diseases have occupied public attention for a number of years. Much has been said and written on this subject, valuable information concerning the nature and cause of these diseases has been collected, and in many cases practical methods looking toward their control have been worked out. But the subject has by no means been exhausted, and there is still much work in this field for future investigation and practical application.

I will not attempt to take up the whole field of citrus diseases but confine my remarks to some that have been unusually troubleome this past season, namely, Melanose and Scab.

MELANOSE.

Phomopsis Citri Fawcett.

This disease has been of special interest to us the past season, since it was on the 5th of last August that I succeeded in discovering the cause. A full account of the disease and of our investigations has been published in Bulletin III, of the Florida Experiment Station.

Melanose has been known in Florida for more than twenty years, but its place of origin and time of introduction into the State are not quite clear. Glancing over the history, we find the disease was first discovered by Webber and Swingle at Citra in 1892. Later it appeared

around Ocala, Stanton, and Sanford, where it was reported as causing considerable damage.

Webber and Swingle studied and described the disease, but were unable to find the cause. However, they concluded it was parasitic in nature, since it yielded to treatment with fungicides. From these centers, Melanose continued to spread, and was reported from many localities in the State. Later it was thought that Melanose might be due to some physiological cause or some condition of the soil. Prof. B. F. Floyd, of the Experiment Station, took up the work from this viewpoint, and made an extensive investigation of the disease. His results led him to conclude that Melanose was caused by some parasitic organism such as a fungus or bacterium.

In the spring of 1912 a biological study of Melanose was begun to determine, if possible, the exact cause. While the character and habits of the disease had been rather thoroughly worked over up to this time, previous investigators had been unable to find the cause. Inquiries and investigations showed that the disease was widespread and rapidly increasing. It is found in nearly all citrus-growing localities today, and I doubt if there is any grove in the State that is entirely free from it.

The usual methods for investigating plant diseases were followed in studying this disease, but with little or no success. Melanose-infected leaves, twigs, and fruits were examined, but no fungus or bacterial organism was found associated with the diseased areas that could be considered a cause of the trouble. Very thin sections of diseased spots were specially stained to bring out any fungous filaments or bacteria that might be present, but these gave negative results. Numerous cultures, under exact scientific control, were made, from diseased spots on leaves and fruit, in regular and special culture media, but we were unable to isolate any fungus or bacterial organism that we could suspect of being the cause.

Attention was then directed to a study of the dead wood in citrus trees. It had been pointed out before that there seemed to be some relationship between the dead branches and twigs and the extent of Melanose infection. Observations in the groves confirmed this, for it was found that Melanose spotting was always heavier on fruit and foliage immediately beneath dead branches. Some dead twigs were collected from orange trees badly spotted with Melanose. These were carefully examined with the microscope, and were found to contain a number of different fungi and bacteria. The Stem-End Rot fungus *Phomopsis citri*, was found more or less abundantly, but there was no special reason to suspect this fungus, for we knew it was the cause of one disease, and knew its customary habit of living in dead citrus wood.

Experiments were then planned to see if it were possible to transfer infection

from this dead wood to new orange growth. It was found that by suspending a small bundle of dead twigs just over some young succulent orange shoots, and spraying this bundle with sterilized water, allowing the drippings to fall on the shoots, typical Melanose spotting could be produced if moisture conditions were controlled. Spots usually appeared as small sunken dots four or five days after treatment, and later developed into typical Melanose markings. Small trees in pots were used in these experiments, and were so arranged that the foliage could be covered with a large bell-jar after treatment. Treated trees were kept under a bell-jar for usually twenty-four hours after treatment. It was also found that washings made from these dead twigs when sprayed on young succulent growth would produce typical Melanose spotting. Spotting on new growth was produced in the grove, by tying dead twigs to young shoots, when sufficient moisture was present.

These experiments proved that the cause of the spotting came from the dead wood, and whether it was some fungus, bacterium, or some toxic principle, was the next question to answer. Not being able to find any fungus or bacterial organism associated with the diseased spots, we were led to suspect that there might be some poisonous principle in the dead wood that was responsible for the spotting.

To clear up this point some other experiments were tried. It was found that washings from dead twigs when filtered to remove all fungus and bacteria present, would not produce Melanose spotting on

young growth. A part of the same washings, filtered to remove only fungus spores and to allow bacteria to pass through, also failed to produce spotting on young shoots. Another part of the same washings not filtered, produced a heavy spotting on young shoots at the end of four or five days.

These results indicated that Melanose spotting was not due to any toxin or poison in the dead wood, but more likely to some fungus.

Repeated infection experiments were continued, using very small bits of dead twigs, less than a half inch in length. Intense spotting was produced by some of these, and they were carefully examined under the microscope. It was discovered that *Phomopsis citri* was present on all these pieces, and in some cases was the only fungus present.

Some experiments were then tried with this fungus. Spores from a pure culture were sprayed on young orange shoots, and in a few days typical Melanose spots developed on the leaves and stems. The experiment was repeated again and again with the same results.

Some of the same cultures of *Phomopsis citri* used by Professor Fawcett in his work on Stem-End Rot were used in these infection experiments, and all produced typical Melanose spotting on young leaves and shoots. This established the identity of the cause of Melanose, but further experiments were carried on to make it more conclusive. Cultures of the fungus were obtained from various sources and grown in pure cultures until spores were produced. Some fruits were inoculated, and at the same time young growth was sprayed with spores

in sterile water. The results from these experiments showed that spores from the same pure culture produced Melanose spotting on young shoots in four or five days, and typical cases of Stem-End Rot in sound, healthy oranges in seven to ten days after inoculation.

THE FUNGUS.

In studying the habits of the fungus we find it lives chiefly in the dead wood of citrus trees, where it is carried over from one season to the next. Even in very small twigs countless numbers of fruiting bodies (pycnidia) may be found. These pycnidia are very minute, black, and imbedded in the bark, showing on the surface as small dark specks or small pustules. The interior of each pycnidium is a cavity connected with a small opening in the neck, which protrudes above the surface of the bark. Thousands of small, colorless, oval spores are produced within this cavity, and under favorable moisture conditions these are discharged through the opening in the neck in yellowish, sticky masses or tendrils. These spore masses are later dissolved by rain and dew and scattered about, producing infection on leaves or fruit or new pycnidia in the dead twigs. The fungus is spread in the tree chiefly by rain and dew. Spores are washed from the dead wood onto leaves and from leaf to leaf until the entire new growth and fruits may become infected.

The disease cannot be spread from the spots on leaves, twigs and fruits. Repeated efforts were made to transfer the disease from these spots to new growth, but without success. Infection is only caused by the spores and possibly the paraphyses,

and since there is no vegetable growth of the fungus and no fruiting bodies produced in these spots or markings, there is no possibility of infection resulting from this source.

Melanose attacks all varieties of citrus fruits, but seems to be more prominent on grapefruit. It is found on leaves, shoots and fruits, but can only attack these when they are young and succulent. As growth hardens, the tissue becomes more resistant or immune. Infection on leaves and fruits occurs as small brown, raised spots, irregular cracked masses, circular markings, streaks or bands. In many cases the entire fruit is involved, the disease producing a roughened surface resembling coarse sandpaper. The chief loss from the disease results in the russetting or disfiguring of the fruit. However, considerable injury may be done to the young foliage, and no doubt a very large percentage of early dropping of young fruits is due to the attack of Melanose.

CONTROL.

In controlling Melanose two lines of treatment may be followed: The removal and destruction of all the dead wood from the trees, and spraying with some fungicide.

Since the fungus is known to live and multiply chiefly in the dead wood, it seems reasonable that the most effective way to control the disease would be to remove and destroy all the dead wood. It is next to impossible to prune out every little dead twig from a bearing tree, but by systematic pruning each year the dead wood can soon be reduced to a minimum, which will materially decrease the injury

to the fruit. There are objections to this method because it requires considerable time and expense, but this question is for the grower to settle, whether he can afford to prune or better afford the loss from injury to his fruit through Melanose.

Webber and Swingle found that Melanose could be controlled by spraying with either Bordeaux or Ammoniacal Copper Carbonate Solution. They recommended two sprayings, one after the bloom dropped, and a second one month later. Probably better results can be obtained by increasing the number of sprayings. The first spraying should be made shortly after the new growth appears in spring. This spraying should be thorough, every part of the tree being drenched with the solution. A special application should be made after the bloom drops, and a third three weeks later. A fourth spraying may be necessary, for the fruit should be protected until it has attained considerable size. In using these fungicides the grower will also have to follow up with some insecticide to keep down the scale insects that will follow.

SCAB.

Citrus scab was very prevalent last season in many sections of the State. From reports received up to the present time, and extensive observations made by the writer and other members of the staff, covering most of the citrus growing localities in the State, the disease promises to be very troublesome this season, especially to grapefruit.

Scab is due to a small fungus, *Cladosporium citri*, that attacks leaves, fruits, and sometimes the young tender shoots.

The appearance of the disease is first noted by small light brown spots on leaves and fruit. On the leaves, as growth takes place, these spots become depressed on one side and raised on the other, forming wart-like elevations or projections. In time the spots become brown or pinkish, and sometimes grow together, forming irregular corky masses, which cause the leaves to become curled or twisted. Wart-like projections or rough, scabby patches are formed on the fruits, which cause them to become misshapen or unsightly in appearance. Minute spores are produced in red masses in the infected areas, and exude on the surface under moist conditions, so as to be scattered about by the wind and insects. These fall on other new growth, and infection takes place. As in cases of Melanose, only the young and succulent tissue is attacked by the scab fungus. After the new growth is sufficiently hardened it is free from attack.

The scab fungus infects the lemon, sour orange, and Satsuma severely, and causes considerable injury to grapefruit. The sweet orange is rarely attacked by this disease.

METHOD OF CONTROL.

In preventing scab the following points should be kept in mind:

1. Destroy all sour and worthless stock.
2. Spray when necessary.
3. Prune out scabby growth.

Sour orange or lemon sprouts that may occur in the grove should be destroyed, as these are usually badly infected each year and are a constant menace to other trees, especially grapefruit. All scabby

fruit should be removed from the grove and destroyed.

In spraying for scab, Ammoniacal Solution of Copper Carbonate and weak Bordeaux Mixture (3-3-50 formula) have been found very effective. In case of severe attacks, and where the object is merely to protect the fruit, make the first spraying just after the petals fall, and the second two or three weeks later.

In order to completely eradicate the disease, a more systematic plan of spraying should be followed. The new growth coming out in the spring should be sprayed shortly after it appears. The first spraying should be followed by two or three subsequent sprayings at intervals of two or three weeks. The new growth appearing in the fall should be protected in the same manner. One must bear in mind the increase of scale insects following the application of these fungicides, and be prepared to combat the scale.

DISCUSSION.

Mr. Wakelin: I would like to ask if there is not something else we can use besides Bordeaux and ammoniacal copper carbonate. If it is necessary to use them three times in the season to keep down the melanose, we have to follow each application with two applications for the scale. I never use these fungicides without getting a heavy infestation of scale, and sometimes two sprayings with a scalecide is not sufficient. That makes nine sprayings in one season to control one disease. That is a pretty expensive program. Is there not something we can use that will have fungici-

dal properties and destroy the scale at the same time?

Mr. Stevens: The lime-sulphur comes nearest to it. It is the only insecticide and fungicide we have combined, but we have not recommended the use of lime-sulphur. In order to control the disease, I do not know just how effective it would be, but it has caused more or less injury to the fruit and foliage, and for that reason we have not recommended its use. However, there are experiments being carried on in the State at present with the use of lime-sulphur for controlling melanose.

Mr. Skinner: Do you think that by excessive pruning, and cutting off diseased fruit and burning it, you can probably control this disease?

Mr. Stevens: I should think that by systematic pruning, taking out all the dead wood possible, you can remove it to a great extent. The fungus lives in the dead wood, and if you remove the dead wood you remove the cause.

Mr. Skinner: Would you recommend taking out the dead wood and spraying the ground with bluestone? That would not affect the scale like Bordeaux. Now, with the nail-head rust—I have perhaps one of the original nail-head rust groves in the State—by spraying the ground thoroughly with Bordeaux, we lessened the trouble.

Mr. Stevens: I do not know just how long the spores will live in the soil, but probably spraying under the trees would be an advantage.

Mr. Skinner: This lemon scab is, I think, the worst enemy we have, except the whitefly. Now, when you tell us to

spray for that, it sounds simple, but it means a whole lot.

Mr. Gillette: Cannot the Bordeaux Mixture and some good insecticide be used at the same time?

Mr. Stevens: I do not know of any that you can combine with the Bordeaux Mixture.

Mr. _____: In spraying with a fungicide, isn't it the point to use the fungicide on the upper side of the foliage, while if you are spraying for the scale insects, you turn the spray to the under side of the leaf, where it is supposed to be?

Mr. Stevens: In the use of a fungicide, the purpose is to cover the entire surface—both upper and lower surfaces of the leaves. The fungicide is only a protection, and you must thoroughly cover every part of the foliage. In the case of melanose, it attacks both the under and upper surfaces of the leaf.

Mr. Sadler: I would like to ask for a description of the early stages of the disease. Is there any connection between the pale, white condition of the trees and this melanose? It seems to me there is some little similarity between this and frenching.

Mr. Stevens: No. Frenching and melanose are two distinct conditions. Frenching is a physiological condition. Melanose is due to an entirely different cause—a fungus. Melanose forms rough, brown spots or markings on leaves and fruit. In frenching, pale white spots are formed on the leaves. We have not been able to locate definitely the cause of frenching.

Mr. House: I would like to ask if,

in the experiments for stem-end rot, you did not get better results with the ammoniacal solution and not such bad results from the scale, as when you used the Bordeaux?

Mr. Stevens: Bordeaux is probably a stronger fungicide than the ammonical solution; that is, if you use the 5-5-50 formula. It may be the Bordeaux would be more effective in killing out the scale fungus. I think Professor Fawcett, in his work of spraying for stem-end rot, found less scale followed the use of the ammonical solution than the use of Bordeaux.

Mr. House: I talked with him about that, and he thought perhaps it was because the ammonical solution is thinner and ran down the stem and disinfected the stem-end rot. It does not stay on the leaves so long, but did its work and got off. What I would like to know is whether it has the same effect on the scale, to do its work and get off, or whether it troubles the scale by remaining on.

Mr. Stevens: It would probably have the same effect on the scale.

Mr. _____: I had an interesting experience with the ammonical copper carbonate about four years ago. Half of a grove I sprayed with the solution; the other half I did not. But in each case I gathered all the thrippy fruit from the trees, and carried it out of the grove and buried it. I saw no bad effect from the scale insects following the ammoniacal, and I saw just as good results where I did not use it for the stem-end rot as where I did.

Mr. House: We had about the same

results in our grove. There were no good results from the use of Bordeaux, only that the scale was worse.

Professor Rolfs: I notice in our discussion we are drifting into a little different channel. We must remember when we are discussing stem-end rot and melanose, that they are two different diseases. Mr. Stevens has told us these two manifestations are produced by the same fungous agents.

In trying to protect our trees against melanose, we must proceed on a different plan from the course we would pursue in case of stem-end rot. Experiments show that stem-end rot cannot be controlled with Bordeaux. The trees sprayed with Bordeaux had more stem-end rot than those not sprayed. Now, in our work, spraying for melanose, the Bordeaux Mixture and ammoniacal copper carbonate has proved very effective.

Let us keep these two points clearly in mind when we are talking about preventing melanose. That is one thing. When we are talking about stem-end rot, that is an entirely different proposition, and we must not consider the two together.

The two diseases or manifestations are caused by one and the same agent. If we have not a plain and clear solution of it as yet, let's not fret, but consider that we are getting so much technical information that will help us along the line of solving these problems. A large number of experiments are being made this year, and by another year we hope to get some definite results.

When Professor Fawcett took up his experiments in spraying for stem-end rot, we were confident that a fungicide would

be the thing. As a matter of fact, the fungicide, when used to prevent stem-end rot, even caused it, because it permitted the increase of scale insects which produced the condition in the orange which made it infective.

When we disturb the balance of nature, we do not know what we are going to get, and we can tell only by making very careful experiments. We do not always know what will follow a certain line of investigation until we have actually tried it.

Now, let us keep this distinctly in mind—the stem-end rot and melanose are two different things to handle.

Mr. Gaitskill: I have had some trouble with frenching, but have ceased to have trouble with it since I took up certain treatments. Whether I am right or not, I don't know, but my experience has demonstrated to me that it is due to too heavy feeding or perhaps unbalanced rations. The tree has indigestion. When I found this condition, I gave the patient a good meal of lime, worked it into the soil, and it would not be long before it was cured.

Mr. Poole: I would like to ask a question. Do I understand that this fungus, up to a certain point, presents the same life history, and beyond that point, the life cycle divides into two phases? If so, what condition indicates which is which, and why, when the fungus gets on the fruit, do we get melanose at one time, and stem-end rot at another time?

Mr. Stevens: It is a pretty hard proposition to explain just why it will cause melanose at one time and stem-end rot

at another. In causing melanose, the spores from the fungus feed on the green tissue. The tissue must be in a certain condition for melanose to be formed. In that condition it does not penetrate the tissue, but forms spots on the outside which are a certain manifestation. In the case of stem-end rot, if the fruit is so infested by scale insects that the fungus can penetrate it, stem-end rot is formed.

Mr. Poole: In other words, if there is a hole in the fruit, you get stem-end rot?

Mr. Stevens: I would hardly say that. It may be the weakened condition of the fruit. If the fruit is healthy, the fungus cannot penetrate it, but in a diseased condition the fungus seems to be able to penetrate the fruit.

Stem-end rot is caused only when the fruit is nearing maturity, while melanose is caused when the growth is in a young and succulent condition.

Dr. O. W. Sadler: I wish to ask a question and make a statement of what I have observed. In my groves of grapefruit, I had dropped some in gathering them. In picking them up, I found some of the grapefruit covered with scale and melanose around the surface, but the stem where the fruit dropped off was clean, and yet it never developed stem-end rot. On the other hand, drops from the same tree, on almost the same spot of ground, absolutely clean over the whole top of the grapefruit, would develop stem-end rot. I considered the thought in my mind whether infection was the same as circulation; that is,

whether the fruit became poisoned from flow of the sap through the twig to the inside of the fruit. You could not detect decay until you cut into it; the fruit was perfectly clean and normal to the eye outside.

Mr. Stewart: I should like to know whether or not the stem-end rot of grapefruit and oranges left to rot on the ground, and the dead wood left to rot on the ground, tends to infect the top of the tree again. What is the danger existing from those practices?

Mr. Stevens: It is not a good practice to leave infected fruit or wood anywhere near your grove. The spores may be washed out into the soil and the wind blow them back into the tree. There is usually more or less dead wood in the tree, and when the spores reach it they develop and eventually get back into the top of the tree.

Mr. Fee: Suppose there was 1 per cent. of loss due to melanose or stem-end rot in a grove. Would you advise, as a precaution for the future, to spray to combat these ills?

Mr. Stevens: You might have 1 per cent. this year, and next year, 10 per cent., with an increase each year until it would be an unprofitable grove. It is not a good idea to have any of these diseases around.

Dr. Berger: In regard to a spraying solution that will serve both as an insecticide and a fungicide, I think it was two years ago I tried to be emphatic in a talk before this Society that such a solution was needed, and needed badly. The point has been brought out again this year. However, I have never had the

time to carry on investigations along that line, and I presume no one else has.

I wish to refer to a mixture of Bordeaux and Whale Oil Soap. Mr. Sampson tried them. He didn't know they would not mix, so he went ahead and mixed them. He had a severe attack of withertip and wanted to keep it down, and he had trouble with scale insects. He watched them, and when he saw them coming on to the oranges, he sprayed with Bordeaux Mixture and Soap, and, as I remember, with success. It seemed to work pretty well.

Mr. Sampson was in town yesterday, and he may be here today, and he may have something to say about this subject.

Mr. Sampson: I was successful then and did control the withertip and controlled the scale at the same time. But now, I would recommend pruning.

Mr. Stephens: How far will those spores drift in the air? What distance? The reason I ask is that there are a good many leaves dropping at certain times, and I thought they might be very fair fertilizer in other parts of the place.

Mr. Stevens: In regard to the melanose fungus; I don't know how far the spores might drift in the air. Spores of other fungi have been known to drift from two or three up to eleven miles.

Mr. Hume: Permit the Chair to make an observation along the line and along similar lines we have had at our previous meetings.

One thing I gather, is the importance in handling not only this disease which has been discussed this morning, but many others, and that is, keeping dead

wood out of the trees. Now, you can go that far with pruning and you are working on the right line. You will find it will pay.

Another thing. While I was at Cordova, Spain, last fall, I saw a lime-sulphur solution being used with most satisfactory results, as a scalecide. I tried to find out where it came from, but the

owner was not there, and the man knew nothing about it, but I gathered it was made in Germany and was an imported article. It was certainly giving satisfactory results for the destruction of the red scale. I think it would be well to look carefully into the lime-sulphur wash, for it has proved valuable in the spraying of deciduous fruits for both fungi and insects.

My Experience With the White Fly

Roland E. Stevens.

My first experience with the white fly came about four years ago, at which time it appeared in one of our small groves, a few of the trees being slightly infested. The effect on the trees was very slight for the first two years, and while they were sprayed twice a year with whale oil soap solution, it seemed to have very little effect. As they did not spread rapidly, we did not have the respect for them which we have later attained. It was not until two years ago that they really blossomed out, as it were, in the whole five-acre grove. At that time I started after them in earnest, and sprayed with an oil emulsion early in the spring and again in August. It seemed to have little or no effect on them, and I lost faith in the miscible oil spray. At that time we also started the fungus. We procured some of both the popular varieties, the red and the brown, and sprayed them thoroughly throughout the grove, with very good results. It seemed that wherever a drop of the fungus solution struck a leaf it very soon developed into a healthy parasite. By the end of the summer the entire grove was thoroughly covered with both the red and the brown fungus, and while the trees did not show any new growth in September nor the following spring, and consequently no bloom, we began to feel we were getting results.

The fly soon spread to our other groves, and as soon as it appeared in one after another, we followed it with the fungus. In one of our larger groves we thought to delay the progress of the fly as much as possible by spraying with an oil emulsion at the same time that we put in the fungus, about two weeks after the fly had disappeared from the wing in the spring.

We sprayed the entire grove at this time, and in August went over half of it with the emulsion the second time. The emulsion would of course kill some of the larvae, but an amount too small to consider it a successful spraying. We have, however, a very good catch of fungus, and the trees, which were very black last fall, are now clearing up and put out a good strong growth this spring. The color is improving, and we believe the worst of the ordeal is over.

I can heartily recommend the fungus diseases as cures, at least partial cures, for the fly, once they have become established. I can not advise too strongly, however, the use of preventive measures. Had we known three years ago what we know now, we never should have lost a crop on half our groves, as we have done now. If the fungus had been started when the fly started and been thoroughly applied, I have no doubt the trees would

never have become so badly infested as they were.

A great many people will disagree with me in my belief that insecticides are of very little use in fighting the white fly. I will add to that statement, however, that I think this applies particularly to our local conditions. In the first place, an oil solution does not mix well with our hard artesian water; in fact, it will not mix at all until we have added from five to ten pounds of whale oil soap to a barrel of water. This in itself is sufficient to kill the larvae in the early stages. We also have conditions in our East Coast hammock which are very favorable to the growth of fungus. These hammocks are low and damp, and we have remarkably heavy dews all summer, which tend to keep the trees damp and help the growth of the fungus. In other localities where the ground is dryer and they have more trouble in starting the fungus, the oil emulsion may be very satisfactory.

I may add, however, that the fungus must be applied very thoroughly and very systematically. It is a general practice in our locality to spray fungus after every rain.

I have heard that the brown fungus is very hard to start, and that it could not be started except by late summer or early fall applications. We sprayed several times in April, 1912, with the brown fungus more as an experiment than because we thought it would take, but in the summer these trees literally turned brown. I think every larva had a brown spot on it, and the tops of the leaves from a distance looked fairly rusty with the spores which had been developed.

We then took the leaves from these trees and mixed them with leaves containing the red fungus and sprayed the two together throughout all of our groves. The brown fungus took better in the spring than from the later application. We are now spraying all the new growth on the trees with a mixture of the brown and red fungus, and we look for a greatly diminished crop of fly when the summer brood hatches.

This is merely a statement of my experience with the fly under the conditions as we find them at about the northern limit of the East Coast hammocks. In other localities, where the conditions are different, unquestionably different methods will have to be employed. But had we sprayed fungus properly each time, instead of spraying emulsions, there is no question in my mind but our fly would have been placed under control very much sooner than it has been.

DISCUSSION.

Mr. H. B. Stevens: I would state that I helped to introduce the fungus and was the first one to get a successful "catch" of the brown fungus. We used to use sprays, but no matter how carefully you spray, the fly is going to go through there, whether or not. We could not get ahead of it.

We have been very successful in spraying for scale with fungus. We sprayed as we do for the red and brown scale and the whitefly. For the last several years we have kept the scale down by the use of fungus, using nothing more than the

water and fungus we sprayed on the fruit.

Mr. Dade: At Orange City I commenced the use of the fungus. I kept at it with the fungus. This is the third year, and we have had a heavy crop, and I think the fly has been reduced. I believe if we follow it with the insecticide, it will break the hold of the smut, so that the orange cleans very readily.

Dr. Berger: I like the tone of Mr. Stevens' paper; he covers the ground very nicely, and it is an interesting experience.

I would like to mention the Winter Haven Protective League. They have fought the whitefly with spraying solutions for six years very successfully, as nearly as I can make out.

Mr. Stewart: The whitefly is like hog cholera; when it gets in there it is going to kill off one crop of hogs before you get rid of it. The fungus in my tangerine grove cleaned it up as though you had gone through it with a fine-tooth comb. Some of my neighbors were spraying for the whitefly, and the only process in the world my trees were going through with was a cleaning up by the fungus. The fungus took care of it as well as it was possible to be done. I have given the fungus no assistance, except to furnish plenty of it. There is no doubt but that sprays have often gotten credit for what the fungus itself has done. The fungus will do the work if you will let it alone.

Mr. Glass: I am here representing a grove that has never been sprayed at all, because of its peculiar extent and condition. We have never sprayed at all; the

fungus is doing the work. There are oranges and grapefruit picked from that grove this year absolutely perfect, where four or five years ago it was almost impossible to find a fruit not infected by the whitefly. I believe the fungus is doing the work.

I have seen a number of leaves which Dr. Berger picked at random through the grove. You need not be afraid of the whitefly if your grove is covered with the fungus, as these leaves indicate. It is a peculiar fact that in the heart of the tree, sometimes the most beautiful oranges have been picked, perfect in appearance, color, size, and shape; what you would call a fancy. There is a suggestion, however, made by a gentleman—I have forgotten his name, he is in charge of the convict camps in that district—Mr. Gillette can tell me.

Mr. Gillette: I am not very familiar with the convict camps. (Laughter.)

Mr. Glass: He showed me some trees he had sprayed with nothing in the world but flour and hot water, making a kind of paste, and diluted it and sprayed it on the trees. The whitefly soot was absolutely removed from the surface of the leaves. He told me he had been at Orlando and Mr. Yothers had talked to him about it. It is possible a little tiny bit of carbolic acid might be added. This may or may not be of use to you gentlemen. The gentleman who told me about it said he had been doing this for twenty years.

Mr. Dade: My observation is that the smut remains where you use the fungus only, and you have the same trouble with that, although maybe you are get-

ting rid of the whitefly. I have no doubt but that the fungus will do away with the whitefly, but it does not remove the smut from the orange; that is one of the great drawbacks.

Mr. Yothers: I do not like to enter into this discussion, except to correct the Reverend Glass in one statement. Personally, I do not know anything about that gentleman he mentioned, and I never heard of that spray of flour and water before. This is the first time it has been sprung on me.

Mr. Glass: Then I am mistaken in the information. The gentleman told me he had been at Orlando at the Experiment Station, and I understood him to say that Mr. Yothers was there at that time, and they discussed it simply as a helpful agency in the control of the whitefly, and in freeing the surface of the leaf from the covering of smut. Of course, the rain washed off the solution of flour and water.

Mr. Stewart: In one of my groves that has the whitefly in it now, it was a mile from anybody's grove, and the first time I discovered the whitefly on, I discovered the fungus there, too, and they have stayed together ever since. Some of my neighbors kept putting on these solutions—I do not consider them enough to get the names of them—and they were telling me the wonderful process of scaling off, like this flour process. I have gone to their groves, and to my own, which had no spraying except the rains from Heaven, and where the fungus has done its work, the rains will take the smut off. After the fungus has done its work, if you will leave it

there, a few rains will loosen up the smut and wash it away. The fungus and the water of Heaven will do the work better than flour and water or any other solution. I have seen it done 365 days in the year.

Mr. Gaitskill: When we first heard about the whitefly in and around Micanopy and McIntosh, I got some fungus and put it in about a dozen trees where I saw the whitefly, and since then I have not gone to the trouble to put on any more. The whitefly does not attack a grove much ahead of the fungus. It follows of itself. I have not found any benefit of spraying fungus in the grove.

I have known groves a mile from any other grove and the whitefly would go there and the fungus would get there directly after it and begin its work. Where I live we have concluded that it is useless, or, at least, unnecessary, to go to any trouble to put fungus in among the whitefly. It belongs with them, will get with them, and will stay with them.

Mr. Dade: I have been watching it closely ever since we have had the whitefly, and I find by close observation that the insecticide does not hurt the fungus except by removing the whitefly.

Mr. Hume: Which is its food.

Mr. Dade: Yes, sir.

Mr. _____: If the flour and water solution, as mentioned by the gentleman on my right, was sprayed on the leaves, would it not have the same effect that the smut has on the orange leaf? The smut simply stops up the pores on the orange leaf, and I should think the flour would do the same thing.

Mr. Glass: In practical effect, the flour

and water cracks immediately and drops off. I happened to see that with my own eyes. It simply dries and breaks and cracks and the first wind blows it all off and it takes the smut off with it.

Mr. Skinner: Do you think enough of this to try it, Mr. Yothers?

Mr. Yothers: It seems to me if they go to the trouble of spraying, they might just as well spray with an insecticide that will kill the fly as well as remove the sooty mold. I am not disputing the fact that flour and water will remove the sooty mold; I don't know anything about

it, but I do know that it will kill some of the mites, the red spider, for instance. It has been found to be very efficacious in the State of Washington in spraying mites, but I doubt if it will have any detrimental effect on the whitefly. I do know that if you will use the oil solution every week it will remove the sooty mold and also kill the fly. The oil solutions are rather inexpensive, and I doubt if they will cost more than the water and flour wash. Just now I have forgotten the formula of the flour and water as used on the mites, but it is about as expensive as the oil emulsion.

Deciduous Fruits For Home Consumption

Prof. W. L. Floyd

A home orchard containing a number of well selected varieties of fruit trees should have a place on every Florida farm, and a few trees may well be planted about our town and city homes, where if well placed and cared for, they will prove both useful and ornamental. Some that deserve a place in such plantings are the following:

PEACHES.

If one does not know how to bud or graft, he may grow some seedling trees, feeling reasonably sure they will bear edible fruit if grown from the fruit of trees of the locality. He will often get in this way trees that have more vigor and longer life than budded ones, and occasionally one that bears fruit of especially fine quality; thus a new variety may originate. There is no better plant to try the operation of budding on than the peach. The seed may be planted in the fall and by the last of June of the following year will have produced stocks into which buds may be inserted. These will grow two or three feet before the end of the growing season. So many farm journals, bulletins and books give directions and illustrations of budding that one may easily get the necessary information as to how to do it.

There are many varieties of peaches to

select from, ripening from May to October, though there is no variety of much value that does not ripen in May, June or July. Throughout the peninsular portion of the State it is best to plant only varieties from the Peento and Honey groups. The parent types of these have been introduced from China, and by crossing with those of Spanish origin already here, have given us such varieties as Angel, Jewel, Imperial, Waldo and many others which are well adapted to Florida conditions.

PLUMS.

There are not many varieties of plums that do well here. The Excelsior, a cross of which a native variety is one parent, is the most desirable one that I have tried. It is a strong grower, forms a shapely tree, and produces an abundance of fine flavored fruit.

Plum roots are not attacked by the worms that cause root knot. These are quite prevalent in soil that has been long in cultivation, and attack the peach, causing weakness, loss of vigor and unprofitableness, the cause of which is not readily apparent. The best way to overcome this trouble is to plant peaches grafted on certain varieties of plum root. The Pasco county plum has proven most satisfactory. The peach should be grafted on this below the ground in order to secure

an even growth of scion and stock; if budded in the ordinary way the result is unsatisfactory.

PEAR.

Though it responds to care and cultivation, the pear may be planted where trampling about it packs the earth, and little or no cultivation can be given. It should be watched for dying back of the branches, due to blight. This disease starts at or near the tips of the branches and progresses downward. Cutting off the affected branches into the new wood ahead of it is the best remedy. This should be done promptly every time signs of it are seen, and the diseased branches burned.

FIGS.

Figs are sometimes disappointing when grown under orchard conditions, though they need not be if their characteristics and needs are given proper consideration. They root close to the surface, are gross feeders, and require much moisture.

In planting about the home they do

best when so placed that their roots may run under buildings, piles of wood or rock. With a little thought they may be so placed as to screen unattractive objects, or round out angularities in the grounds. In such situations they thrive remarkably well and bear quantities of choice fruit.

One may start his own plants of figs quite easily from cuttings. They should be made from the branches of strong, healthy trees. The suckers which spring up about the base of the old plants should not be used. These cuttings should be made ten to twelve inches long, the cuts at the lower end so made as to expose the hard wood of the partition at the node, and not the pith. They may be set in place where the plants are to remain permanently, and should be buried about two-thirds of their length. They are best made during the winter. There are several varieties that do well here, as the Brunswick, Brown Turkey, Ischia, etc., but the most reliable and satisfactory is the Celestial, or sugar fig.

DECIDUOUS FRUITS.

C. M. Griffing

Did you ever undertake to talk to a person or a group of people about something in which they were not interested? Rather an uphill pull, isn't it? No one realizes more than your committee that to the majority of the members of this society only citrus culture appeals. It is well that it should take first place,

as it is our staple fruit crop. Of all the crops that grow in Florida, citrus fruit culture is most widely advertised by the promoter and land companies. The golden balls are dangled before the eyes of the prospective investor and settler, until his vision is a maze of golden globes from which he imagines he sees streams

of real gold pouring forth into the tills of the owner, who is pictured as having little to do, but to while away his time in the cool shade of the beautiful evergreen trees and watch climate, sand, water and Doctors Nitrogen, Potash and Phosphate's compounds produce magic results year after year.

Were this picture a true one, there would be little need of this gathering from year to year for the purpose of studying and discussing with other growers, and consulting with the learned professors and scientists of the State and Federal Department, the various and complex difficulties to be overcome. Every member of the Society, and especially those who have been engaged in citrus culture for a few years, realizes that it is simply a case of "the survival of the fittest."

The more hazardous the undertaking or industry, the more fascinating it becomes. In no industry is this more keenly illustrated than the growing of citrus fruits. A few years' immunity from damaging freezes, and we see the planting of citrus trees extended to the very northernmost limit; and a few of the golden balls hanging on the trees hundreds of miles north of the zone of reasonable safety, sets the community wild, and commercial plantings are immediately planned, while the more somber-hued, steady going deciduous fruits adapted to the locality are looked upon as a secondary consideration, and in many cases entirely overlooked or forgotten.

Diversification and crop rotation is being urged and taught by every agricultural paper, State or National institution or

agricultural college. Diversification should be applied to fruit culture as well as to farm crops. If sufficiently far South to safely grow tropical fruits, Avocados, Mangoes or any one of the many others that only need to be produced in sufficient quantities and introduced on to our vast markets, to make them both popular and profitable, you should plant a reasonable quantity of tropical fruits. If too far north for these more tender tropical fruits, then you are far enough north to consider some of the deciduous fruits, of which peaches is probably the better known and more popular of those grown in the South.

The interest in peach culture by members of the society is not sufficient to undertake to consume your time in a technical discussion. We will therefore just touch on a few of the essentials and some of the troubles. Peach growing has troubles of its own, the same as citrus culture, some of which are probably more vital. But if proper varieties are selected, trees well planted and cared for, the results will well repay the cost.

First—Select and plant only the varieties of the Spanish or South China strains, preferably the latter. Why is it that the orange grower who knows will not plant Washington Navel in Florida? They won't bear. For the same reason, do not plant Elberta and other varieties of the North China or Persian strain of peaches in Florida, as the trees do not grow well and will not bear at all.

Second—Plant on well drained, virgin soil. Drainage is essential, and virgin land is best, as it is less liable to be infected with Nematode, which is inju-

rious to the peach tree root. If virgin soil is not available, spade in eight or ten quarts of Canada hard wood ashes in a space three or four feet in diameter where each tree is to be planted.

Third—Fertilize liberally, applying from three to six pounds of good Orange Tree Grower fertilizer the first year to be worked into the soil in three or four applications, in the same way as for young orange or grapefruit trees. The second year apply from six to ten pounds of fruit-producing fertilizer, or what is sometimes termed as fruit and vine manure, analyzing at least 10 to 12 per cent. of potash, in two applications, one in February and the second between April 1st and 10th.

Fourth—Cultivate shallow with clean culture for the entire first year. For the second year clean culture commencing in January and continuing until after the fruit crop is off and all decayed or dropped fruit is removed from the orchard, after which beggar weed should be sowed and allowed to cover the ground.

Fifth—No pruning is required, aside from the shaping of the tree in to the form you wish it to grow, which should be an open vase shaped form, and the removing of chafing limbs.

Sixth—if the orchard becomes infested with San Jose or other scales, which it is liable to, as the San Jose scale is now widely disseminated throughout the State, spray the trees during the winter with self-boiled lime and sulphur mixture, and during the summer with Whale Oil Soap, a light application, or with carefully prepared self-boiled lime and

sulphur mixture, the latter being a valuable fungicide as well.

Were it not for the necessity of spraying for curculio and brown rot, for which a fungicide must be used, thereby killing out the natural fungus enemies of the scales, the writer would recommend the introduction of the fungus in the orchard to control the scale situation instead of spraying.

Seventh—Curculio: Did you ever see a worm in a peach? Well, that is the result of the sting of the curculio. The earlier varieties of Florida peaches are not so badly infested as later ripening sorts, as they bloom and set the fruit before the first brood comes out of the pupa stage, and the fruit ripens before the second brood of insects or curculios lay the eggs which cause the worms in the fruit at the ripening season. All trash, dead grass, brush and bushes should be destroyed and the ground kept clean around the peach trees or orchard for a distance of a hundred feet or more, from about January or the 1st of February until after the peaches have ripened and the dropped fruit has been removed from the orchard. This cleaning up and stirring of the ground destroys many of the pupa and reduces the number of curculio that will sting the newly set fruit. The young fruit that is stung will drop when it is from a third to a half grown. The larva in this young fruit goes into the ground, passes through the pupa stage, and develops into an adult curculio in time to sting the later ripening varieties of peaches just before they commence to mature. The

thorough cultivation of the orchard during this period destroys the larger portion of the insects in the pupa stage. The time consumed in the life cycle of the insect from the laying of the egg in the fruit to the emerging of the adult curculio from the pupa has been found to consume from thirty-seven to fifty-eight days. In our moist, warm, Southern climate and soil, the development is rapid, probably averaging from forty to forty-five days. Spraying as a preventive for the ravages of the curculio, and as a preventive of brown rot is highly recommended, which we will explain under the head of "Brown Rot." Where a limited number of trees are planted, the practice of keeping pigs or poultry in the orchard is a good preventive, as they destroy the dropped fruit in which the larva are working, as well as destroy the pupa and adult insects. Jarring the trees early in the morning and catching the adult insects in sheets, or allowing poultry to pick them up is also a practical means of control where the number of trees is not too great.

Eighth—Brown Rot: The brown rot is a fungous disease of the peach attacking the fruit about the time of maturity or ripening. The brown rot spores are carried over from year to year on mummified fruit hanging on the trees, or allowed to remain on the ground under the trees during the winter, therefore the advisability of removing all decaying or mummified fruit from the trees during the period of clean cultivation before beggar weed or other leguminous crops are allowed to cover the orchard. Injuries from brown rot and from the

curculio can be controlled largely by the use of a fungicide to which arsenate of lead is added at the time of spraying. The most successful spray for this purpose has been found to be the self-boiled lime and sulphur mixture to which is added two pounds of arsenate of lead to each fifty gallons of spray mixture. The first application to be applied about ten days to two weeks after the bloom has dropped, followed by a second spraying in about three weeks, and a third spraying about three weeks before the fruit matures. The fungicidal properties of the lime and sulphur mixture destroy the fungus spores, and the arsenate of lead destroys a large number of the beetles (curculio). Those wishing to investigate further the practice of spraying peaches for the control of brown rot and curculio, can get much valuable information from Farmers' Bulletin No. 440, by Professor W. M. Scott and A. L. Quaintance, published by the United States Department of Agriculture, issued under date of March 27th, 1911.

We have given this portion of our report a considerable space, as your committee realizes that the injury from curculio and brown rot is the chief barrier to the more general planting and growing of peaches.

Plums: Under the head of other deciduous fruits, there are several worthy of attention. Some varieties of plums do exceptionally well in Florida, the fruit ripens early, is valuable for home use, and finds a ready market at good prices. Care should be taken in the selection of varieties, and only those adapted to Florida should be planted. In planting a plum

orchard, it is well to plant through the orchard, or near the plum trees, some of the native wild plums, as most of the varieties will be found to fruit much more abundantly when they have the additional pollen of the profuse blooming wild plums near at hand. The same general method of cultivation, spraying and treatment as recommended for the peaches, applies to the plums.

Your committee believes, and in fact knows, that if those who desire to grow peaches and plums in Florida will select the right varieties, fertilize and cultivate and care for the peach or plum trees as carefully as they do their orange or grapefruit trees, spray and care for them during the period of fruiting as suggested in this report, the results will be entirely satisfactory, and the growing of the fruit will be highly remunerative. The interplanting of peaches and plums in a newly set orange or grapefruit orchard is highly recommended. Where the orange or grapefruit trees are planted a distance of thirty feet apart each way, a row of peach or plum trees could be planted through the orchard each way, midway between the rows of grapefruit or oranges, making the trees fifteen feet apart each way. If the citrus trees are planted at a distance of twenty-five feet apart each way, a peach tree could be planted in the center of each check. The peach or plum tree would not prove a detriment to the development of the citrus grove, and by the time the citrus trees require all of the ground, you will have been repaid for your trouble many times over, without any additional expense in the use of land or cultivation.

Japanese Persimmons: The Japanese persimmon thrives in all portions of Florida. While many of the varieties of the persimmon do not produce perfect flowers, and the fruiting of the trees are uncertain, yet the Tana Nashi, Triumph and Zengi varieties bear abundantly and commence fruiting at a comparatively early age. The persimmon commands good prices on markets where it has been introduced, and its superior quality as a fruit is known by the consumer. At this point it might be well to mention that the experiments in the processing the persimmon to render them non-astringent, which have been conducted by the Department of Agriculture, Bureau of Chemistry, H. C. Gore, have demonstrated that a hard astringent persimmon can be rendered as non-astringent and as palatable as an apple in from twenty-four to forty-eight hours by subjecting them to the fumes of carbon dioxide gas. It is thus entirely practical to treat this fruit in a commercial way, removing the danger of the unwary customer biting into an astringent persimmon, causing a most unpleasant puckering of the mouth and palate. With this danger removed, the persimmon will rapidly grow in popularity on all markets where it is displayed.

Pears: The pear tree thrives in nearly all sections of Florida, but in Florida the same as in nearly all sections of the South, pear blight renders the production of most varieties unprofitable, and destroys the orchard and appearance of the trees. The old Chinese Sand Pear, the parent of the LeConte, and which is also supposed to be one of the parents of several other very popular pears, is a va-

riety entirely immune from the blight, and bears abundantly along the Gulf Coast and in Florida wherever it has been planted.

Another variety that has been fruiting in Lake County, Florida, for many years is the Cincincis. While your committee could not recommend such varieties as the LeConte, Bartlett, Keiffer, or Garber for Florida planting, yet we have no hesitation in recommending either the Sand Pear or the Cincincis. These varieties are not of the high flavor and quality of many of the pears grown in the North, yet they are excellent for preserving and canning, and should not be overlooked in selecting deciduous fruits for Florida.

There are other deciduous fruits that might be considered, but these are the most prominent and the ones that should be considered by every home owner.

In closing the report, your committee wishes to emphasize the fact that if you expect satisfactory results from these deciduous fruits, when planted in out of the way places and neglected wholly or partially, it is useless to plant them, but if carefully planted and given the same careful attention, the successful citrus fruit grower gives his orange or grapefruit trees, satisfactory results may be expected, and you will find that diversification in fruit growing is equally as satisfactory as diversification in farming.

DISCUSSION.

Mr. Dade: Some of our persimmon trees have cast their leaves, and in a

short time were apparently dead, with no apparent cause. I have seen some of our healthiest trees do this way.

Mr. Griffing: How old were the trees?

Mr. Dade: About four or five years old.

Mr. Griffing: I would call attention to the fact that the Tane Nashi persimmon trees hardly ever get to be over seven or eight years of age without dying, for no apparent cause. However, often when you find these trees dying, if you will look carefully you will find a borer at the root. I cannot say what is the cause of the Tane Nashi and other varieties dying, unless it is the lack of the long life quality which is natural to the tree. The Zengi is, I presume, the most long lived; next to that, the Triumph, and next to that the Tane Nashi, which is one of the shortest lived varieties.

Mr. Dade: The trouble seems to commence at the top of the tree and, so far as I can see, there is nothing whatever the matter with it.

Mr. Hume: Examine your tree very carefully for borers. Frequently they are in the tree and you do not find them until you cut it open. I have come to the conclusion that the greatest enemy to the long life of the tree is the flat-headed borer. You cannot tell he is there. If you will watch the trees at a certain season of the year, just in the spring after the leaves are out, you will find the gum beginning to ooze through the bark. Then go over them with a knife and an oil can of carbolineum. It will attack the native stock; you will find it in the native

persimmon trees; you will find it in maple trees, and it causes an untold amount of damage.

Mr. Lamont: I have a number of the Tane Nashi variety, and they are all bearing except one. That is large enough to bear. It has bloomed three seasons in succession, and dropped the bloom every time.

Mr. Hume: I have my doubts that it is Tane Nashi.

Mr. Stewart: I would like to know if any one on the committee, or anyone else, knows about the cherry tree. Has it been tried in Florida, and what about it? I know nothing about it in Florida, and have been unable to find anyone who did. I was looking through a catalogue, and I sent for two of every kind, to see what the result would be.

Mr. Griffing: In Jacksonville we get lots of homes seekers coming in. They want to know about currants, cherries, apples, gooseberries, and things like that. I tell them if they must have those things they had better go right back where they came from—where those things grow.

Mr. Dade: I have grown a cherry, grafted, ten or fifteen high high, as fine as you ever saw. But the intersection cracked open, very much as you have seen the persimmon do. I suppose it was some fungous trouble—am I right? There is no trouble at all to get the cherry to start on the wild stock, but after two or three years, it goes back.

I would like to ask about a disease of the fig; a blight, where the fruit drops off and extremities of the branches are affected something like the withertip of the orange. Before the fruit ripens, it

begins to blight. I never saw it until last year.

Mr. Hume: The trouble is very likely due to a severe infestation of the root knot which has been gathering force and finally got the upper hand of the tree. It will probably kill the tree.

Mr. Webster: In regard to the persimmon again: I have lived here thirty years, and long ago my father grafted some buds upon the native persimmon stock, the three or four varieties you have spoken of as being successful. As some of you know, the persimmon is a great tree to sprout from the roots. The original grafts have all died out, but my father has re-grafted from the sprouts, so that we have always had a continuous persimmon crop for the last twenty-five years.

Mr. Hume: I have had some experience with the cherries, and my advice is to leave them alone. You will never get any fruit.

Mr. Marks: Some one has recommended the beggar weed as a cover crop. Do you know any ills that come from the use of beggar weed?

Mr. Griffing: I have never noticed any. Of course, it is going to increase the fungus, but that will help the scale situation. The growth of the beggar weed in the orchard is, of course, conducive to a humid condition, and is beneficial rather than detrimental. I never noticed any detrimental effects on account of the beggar weed in the peach orchard.

Mr. Gaitskill: In connection with the persimmon being short lived; twenty-five years ago I grafted my first persimmon in stock three or four inches in di-

diameter, about four or five feet up. They are still living and bearing well. When I grafted close to the ground, they were short lived.

Mr. Hume: The trouble is, the borer is more likely to attack close to the ground rather than where it is at a greater height.

Mr. _____: They used to, a few years ago, bank their peach trees to prevent the eggs from being laid and hatched. I never knew whether that proved a benefit or not; banking the trees. Is it done any more, or has it proved to be unsuccessful?

Dr. Berger: I have seen very little banking of the trees recently. I know it has been done, but I doubt its being recommended highly.

Mr. Cox: Is there an apple that is a success in Florida? Some years ago it was said that some grafted the apple into the wild haw, but I do not know whether they succeeded or not.

Mr. Griffing: You can get an apple to grow in Florida. There are two or three varieties that will produce some fruit. A gentleman asked me about apples, and said he and his wife were very fond of apples and would like to have a tree. I told him he had better put in a tree for himself and one for his wife, and maybe they could each have an apple, if each tree bore well.

In regard to grafting on the haw; the apple will form a union, but it is not a good union, and the results are not good, from a practical standpoint. I do not think it is worth the trouble.

Vegetables

S. H. Gaitskill

I had hoped Mr. McQuarrie would be here to make the report on vegetables. I am simply a "fan," and would rather listen to the other members of the committee make the report.

The main thing about vegetables in Florida for the majority of the people who live in this State, is along the lines of mere family consumption. Every family should have vegetables; every man should have a garden with ordinary herbs and vegetables growing in it. It is astonishing how it will reduce the high cost of the grocery bill, and the amount of pleasure you can get and give to the woman of the household if you keep her supplied with fresh vegetables. There should be a variety such as the members of the family prefer. Almost anyone can grow enough vegetables for family use, have a strawberry patch, and so forth. It will help very materially so far as cost is concerned, so far as health is concerned, and so far as peace in the family is concerned.

As to grapefruit growing commercially; I have lived all my life in Florida among the grapefruit growers; I have not been a very extensive grower myself. While we have some very nice orange groves, profitable ones, too, quite as successful as in any other part of the State, I would say that more money has been

made among our people by growing vegetables than has been made growing oranges. I think the people coming to Florida today are stretching the orange proposition too much. An orange grove is an expensive thing; to get a start on vegetables, isn't. There is no business in the State that I know of that has been carried on in the way that vegetable growing has, that has paid better results than vegetable growing.

I am sorry to say that the majority of people who come to Florida are more or less gamblers. A few of them, like Mr. Gillette and Mr. Taber, came for their health. They both came here to die; so their physicians told them, and see what it did to them! (Laughter.) Most of the people come here with the idea of getting "rich quick" by the medium of the fruits or vegetables.

Vegetable growing is a business, a conservative, steady business, if you want to make a success of it and get all there is in it, out. Do not put too many potatoes into one hill, if you want to make a fortune out of it. Plant a few acres of this, and a few acres of that. Most men prefer to make a specialty of one thing. I think it better to put in a reasonable acreage of several crops; when one or more of them don't pay, you make it up on something else. Most people

plant heavily and entirely of one thing. In case of misfortune, the entire profit for a year is lost, and possibly it puts you so badly in debt that the next year's profits are gone, too. By a diversified planting, you keep a balance, and the success with one will counteract your loss with another, if you have a loss. We have oranges around where I live, too, and if our oranges do not pay, we make something out of our vegetable crop. We follow the diversified plan. We grow lots of watermelons, and similar crops, and we have made money; good money, and done well.

Vegetable growing should be carried on in Florida more like the business of Denmark, intensively.

All land in Florida is not suitable for vegetables; all land is not suitable for fruit growing.

I do not think I can say anything further that will interest you.

I will end as I begun, and say that the average man shoud have a garden in which he grows plenty of vegetables to eat and plenty of vegetables in the garden to keep peace and happiness in the home.

VEGETABLE MARKETING.

C. K. McQuarrie.

Florida has the unique distinction of being for the four or five winter months of the year the vegetable garden of the Northern States. The industry of vegetable growing is third in importance, according to the list of values of agricultural products. The latest available source along this line of information is the Commissioner of Agriculture's report of 1911-12. That report gives the vegetable crop a value of eight and a quarter million dollars; the citrus crop is valued at over eight millions, and the general farm crops at sixteen millions. But, if we add to the vegetable crop the enormous amount that is lost every year through faulty methods of marketing, these figures could be largely increased. The real question before the vegetable grower and trucker

today is not how to grow the crops, but how to market them to the best advantage when they are ready to move. The question of packages, honesty in packing, transportation, and marketing in such a way as not to overcrowd any particular market, are dominant questions which are often overlooked. Methods of production are really secondary to methods of marketing, and yet most of our vegetable growers lay the strongest stress on how to produce the crop. The production is really the simplest part.

The demand by the ultimate consumer is large and increasing right along, but the lack of proper distribution of their products is an evil constantly affecting all our vegetable growers. Owing to poor distribution and other causes, we are

brought face to face with the great discrepancy between the prices paid by the consumer and the prices received by the producer. It is the unreasonably high cost of the transmission of the goods from producer to last buyer that bears heavily on both these parties, and this is caused principally by the number of middlemen that handle the products. Too many parasites have a whack at it between the grower and the consumer, and the great problem before us today is to adopt some policy in our shipping and marketing that will bring the producer and consumer into more intimate relationship. The question of the surplus middleman, the regulation of the commission merchant, cutting out all unnecessary handlers, the getting direct dealings between producer and consumer, are vital questions of today to the Florida vegetable grower and trucker. We may be able to do a little by legislation, but our past experience along that line does not afford us encouragement. Party prejudice and trust methods have to be reckoned with when we attempt to legislate for ourselves, as is evidenced by the long delay of the parcels post. Co-operative methods of selling and purchasing, opening up direct communication between producer and consumer, form one way of cutting out the sixty per cent. toll that the middlemen now exact.

The time has come for thinking in large figures. In every line of industry we find the getting of goods to market more and more systematized. The producers of manufactured goods are leaving no stone unturned to cut out all unnecessary expense in getting in touch with the ultimate consumers. They are showing us

an object lesson in cutting down cost and eliminating waste at every point. But in that article so necessary to human life, fresh vegetable food, we find a wasteful exploitation at every point in its passage from producer to consumer, and a lack of co-operative methods of distribution. In the production of vegetable food there are large numbers employed, and nearly every human being is a buyer. Dealing direct with the consumer must be the ultimate goal of all our efforts, whether by means of co-operation in shipping and getting in direct touch with the public markets of the Northern cities, or by using the parcels post to a large extent. In its present form, the parcels post is not much of a help to the Florida producer. Still, there will be a prospective wide field here when the rates are lowered. This is done in European countries, and if possible there, it is surely possible here. And to that end, the fight for an improved parcels post must be kept up until it is modified to meet the needs of the agricultural producer. The dusky gentleman in the woodpile, in the shape of the zone system, must be eliminated. The express companies put him there, and the food producer must get him out of there. Right here we want to remark that Uncle Sam will make a good partner and a good middleman between the producer and consumer. He will certainly be honest and try to give both parties a square deal, and there is no reason why he should not serve his patrons at cost, and right along that line is where the vegetable grower is going to solve many of his present marketing difficulties. Local canneries to take care of surplus products when a glut in the market occurred, would be a very practical

way of avoiding considerable of the losses that now occur, but the cannery is not adapted to all of our vegetables, and the difficulty right there would be to get a party competent to run a cannery so as to produce a high grade product. The short season that the cannery would be in operation would tend to make this a difficult problem at any time.

One of the helps to the solution of marketing difficulties would be a more co-operative spirit among the growers so that they would produce materials in large quantities of a uniform quality and kind, and insist that buyers pay cash, F. O. B. If all the growers were united along this line, they would solve most of their difficulties. Cutting out consignments entirely would go a long way to cut out the unnecessary middlemen and jobbers.

When all the cities and towns adopt a public market system, and the Florida vegetable grower can sell direct to the market keepers of these towns, this will help to solve, to a certain extent, some of the present troubles.

The producers of food will weld themselves *some* day into one *great* association and the people will operate public markets in every city of our country, and then will come the swan song of the non-producing middleman and parasite, who will haste to fall back, where he ought to be now, in the class of producers from the soil. Then let us help to hasten that day by united efforts along all practical lines of the elimination of unnecessary costs in getting our products direct to the consumer.

Tariff Discussion

Mr. Skinner: Now, I am not going to read this long paper to you; it is too near dinner-time. This is really the argument made before the Ways and Means Committee in Washington by Mr. Temple, Mr. Chase and myself.

Going back to the beginning; I received a letter from Mr. Chase saying that there was a frame-up in the tariff situation, and that if we did not want to get badly injured, we had better "get busy." I wrote Mr. Temple immediately and arranged a meeting between Mr. Temple, Mr. Chase and myself in Tampa, where we discussed the situation and came together, knowing that all our interests in this were identical. There was very little response to that call, or suggestion, for a meeting, rather, because no meeting was ever held; we simply put out a feeler to find out if the growers were interested. My friends, the growers of Florida are great optimists. They were like the man who had started to fall from the top floor of a ten-story building; when he reached the fifth floor he said here he was half-way down, and nothing had happened yet.

Now, I want to tell you that you do not know the situation as it is.

Mr. Bond: Oh, pshaw; I knew all about this business before you were born. It is an old story.

Mr. Skinner: Well, Mr. Bond, you don't know the situation as it is now.

This same situation did not happen before. This same situation didn't happen before I was born.

Now, I am not going to talk politics in any way, shape or form. I am talking facts for your information, and I don't want to get up an argument. I want to say this; this is history, and can be proven, if it is necessary. There is a tremendous upheaval in this country, which we all knew was going to take place when the Democratic party put the Republican party out of politics. All the people knew it was coming. In New York there was an appeal made—I will not mention any names—by one large, political organization to get a certain district, to get a certain section of people to support them in that district, and in return for that support, citrus fruits were to come in free, absolutely free.

California elected a Democrat from its citrus district, and that is one of the things that saved us so far.

This tariff schedule is drawn, not to give you justice which is asked; my attitude in going before that committee was not for privilege, but simply for justice. We were willing to stand on the same basis as the other fellow, but that tariff schedule to which Mr. Temple called the attention of the public, and I called the attention of our Congressmen to, that cut reduced the rate from 85 cents to 28 cents, when the fruit is shipped in a box;

that is the practical effect of it. Considering the shipment in bulk, it is cut in half; half a cent a pound—it is now a cent a pound. It says tariff shall be reduced on packages running over a foot and a half to two and a half feet to so much per package, and from two and a half to five and a half, to so much per package, and in bulk both it amounts to one-half cent a pound.

The chairman of the committee, Mr. Underwood, said that the intention was to cut this tariff in half, but the effect was to cut it three-fourths. Statistics have been sent abroad in this State as to the foreign orange box. The foreign orange box is twice as large as the Florida orange box. It is not fair to say that 10,000,000 boxes of foreign fruit is the same as 10,000,000 boxes of Florida fruit, because it is equal to 20,000,000 boxes of Florida fruit. Mr. Hume has been in Spain recently, and he knows the dangers that threaten us, and he urged me just as strong as he could to go there and do everything I could to bring this before the committee.

Our representation by part of the Ways and Means Committee was all right. Our reception by one member of the Ways and Means Committee was a disgrace. We had come all that way to present this thing, and we were given, possibly, ten minutes; the importers were given all the time they wanted. However, we got a little more before we got through. It was not just; they were not seeking to give us a fair trial. But I will tell you this; I think we are going to get

a square deal before we get through with it.

Mr. Goodwin: I would like to call attention to a fact which has been overlooked. There is some other business on top of the earth besides the citrus business. There is a large acreage devoted to pineapples; in St. Lucie, Brevard and Dade Counties I understand there is a large pineapple acreage; over one and one-half milion boxes were shipped from that section. This business is liable to be thrust out of existence.

I attended the meeting at Tampa, and I am sorry to say the representation there was small. I went home and got the growers together, and we created a fund of \$125.00, and we sent a representative to Washington. I think they made a good report.

Mr. Gillette: I think probably I know as much about the tariff as a good many of the rest of us. I think very few of us do understand it. I think I am as deeply interested as most of us, and I am going to ask a question for information.

I must admit I was scared stiff at the drift of the tariff legislation. But since this discussion through the newspapers has taken place, I have recovered somewhat. You have probably all read the discussion carried on through the papers by Mr. Temple and Senator Bryan. I must confess I was very favorably impressed with the statements made by Senator Bryan. It helped to take off some of the scare. For instance, he called attention to the fact that Canada consumed approximately 3,000,000 boxes of or-

anges and grapefruit. Canada is absolutely a free trade country. There never has been a dollar or a penny of tariff on fruits entering that country. It would naturally seem that Europe would look to that as a tempting market. There is a place where 3,000,000 boxes are consumed; why don't they go there after that market?

Mr. Skinner: There are no steamship lines there. They are all connected with New York, Boston or Baltimore, and practically no steamships that go to their ports.

Mr. Gillette: At the same time, the rate from Europe to New York is 25 cents per box, and our freight rates from New York to Canada are practically local anyway; consequently European fruit going into New York can reach Canada just as cheap from a freight rate standpoint as the Florida fruit can. Now, then, that being the case, I fail to see why only 270,000 boxes went into Canada as against a balance of 3,000,000 boxes from Florida and California.

Another thing I would like to ask: At present oranges are selling at the rate of \$5.00, \$6.00 and \$7.00 per box. It does not seem to make any difference what the price is in New York; it seems that would be the very time the foreign shipper would rush his fruit into the market, and if he won't rush into that market to get the benefit of the high prices, why should he rush a world of fruit into it when the price is \$2.00.

Mr. Skinner: He does not have any fruit at this time of the year. It does not affect our Valencias at all; it affects our fall fruit.

Mr. Gillette: Well, that's pretty bad.

Mr. Skinner: That is what I say, Mr. Gillette; the more I go into it, the worse it looks.

Mr. Gillette: That is why I am asking.

Mr. Hume: I think I can answer Mr. Gillette's questions, if he wishes. I understand Mr. Gillette's suggestion in regard to it perfectly. I was scared, too, but I have gotten over it. While I am fighting as hard as I know how to fight, for everything we can get, I have a feeling in the back of my head that it will adjust itself, and adjust itself favorably.

In regard to the suggestion with reference to Canada; I think that is very largely covered by the remark of Mr. Skinner that there are no direct lines out of the Southern European ports into Canada and owing to the danger of ice and fog, the majority of the Canadian ports are not open in winter. It is easier for people in Canada to get their fruit out of the United States than out of Europe. Up until this time they could probably, on the whole, secure it with the freight rates added out of New York port, nearly as reasonably as they could out of European ports.

Answering your next question as to why the fruit is not coming in now, under the present price condition, the Spanish crop, which is the most important thing we have to face, and which has been placed at about ten million boxes of fruit in certain reports I have seen, very greatly exceeds that amount. I stated, and I know whereof I speak, that the Spanish crop in amount equals the best that California and Florida in any one

season yet have done together. Mark you, I speak of oranges; not grapefruit and oranges, or lemons and oranges. That is about all Spain grows. There is a district in Spain in which practically nothing but sour oranges are grown. They send it to the canny Scotch, and the canny Scotch have waxed rich making it up into marmalade.

In the first place, they supply their own country, and just as soon as you touch an European country, you touch a fruit-consuming people. They supply their own country, the French market, they supply Germany, Belgium, Holland, Switzerland, Norway, Sweden and Denmark—just a few shipments—they supply England the bulk of what they use; England, Scotland, Wales and Ireland.

Now, then, in the orchards of Spain there is not, with one exception, I might say, there is not a single packing house. There is not a house, hardly, that people live in, in the orchards. The people live in towns; I might go back into the reason for that, but I will not. In those towns you find the packing houses, and they are owned and controlled by foreigners; by people who represent the English people, the French buyers, Dutch buyers, German buyers. Before I left there early in October, the handling of that crop had all been arranged for; every detail, even to the buying of the boxes and paper, and the arrangements had been made at the other end of the line.

It is not going to be an easy thing, on the spur of the moment, for them to switch off.

The marketing season in Spain is di-

vided into two sections; they quit after the Christmas trade. The bulk of the crop north of Valencia goes before Christmas. There is danger from frost, and the fruit matures earlier than south of Valencia. The marketing of the Spanish crops exactly covers our own. The whole Spanish district lies north of the north boundary of Georgia.

Mr. Bond: I won't talk more than three minutes. I want to throw a bouquet at our chairman; he should be in Washington in Champ Clark's place. I mean it; that is no sarcasm.

Now, I would advise everybody in this audience who is interested in the tariff question, to get yesterday's Times-Union. They have an editorial on the situation, quoting from the Grower and from Senator Bryan.

I would not undertake to contradict any statement our chairman has made. There is no question about its being the truth.

Two years ago I came from Panama, as I did this year. It was the latter part of March or the first of April I was in Kingston. The steamer stopped there and they loaded 500 boxes of oranges to go to New York. I was there this year and could get plenty of oranges. Anybody could go down there now and ship them to New York, but they are poor oranges; no comparison to our Florida orange. The quality alone of those oranges will stop competition with our product.

Now, I repeat what I said in Tampa, and I think some people will give me some credit for a little common sense. I do not consider myself a fool in the business world. I have paid every debt I

owe or that I ever contracted to make or that I agreed to make, and a great deal more, and I am not a poor man. I have been studying this question as best I may, and I believe I stand for the greatest good to the greatest number.

The point is this, it was a foregone conclusion; the people of the United States, whether right or wrong, settled it. There is other work for us to do. The tariff is settled; you might as well let it go. The committee is going to carry it through, whether or no. It will be a live question again two or three years from now.

We must turn attention to getting the benefits of our fruit in the best manner; make the orange a necessity, just as much as meat or apples, or any other product. Extend this consumption and increase its use. The quality of our oranges cannot be obtained anywhere else. Let us unite and support this organization; we can help the growers in many ways. We object to high rates; why can't we fight against them. I endorse the paper of the gentleman who spoke about vegetable growing.

The tariff, so far as I can make out, is for two years, at least, a dead letter.

Mr. Hamlin: Just one moment. I wish to say that at the request of various people interested in this subject, I handed to you, Mr. President, a resolution which has been prepared with great care and which is intended as a compromise matter, and which people all over are united in voting for. I believe it will accomplish every result that can be accomplished at this time. I have had long talks and voluminous correspondence with

the Senators and Representatives of our State in Washington, which it may not be necessary to go into, but I know their position, and know that this resolution would be acceptable to them. I do not insist upon calling it up now, but I wish to give notice that at some convenient time, I will call that resolution up. It remains with Mr. President and with the gentlemen present in the Society to say whether or not it shall come up now, or at some other time. I would prefer to confer first with the administrative committee. I have not shown them the finished product. The committee is so situated they cannot have a formal meeting, but I am told they would concur in such a resolution as has been prepared, but whether they will or not remains to be seen. I would like to have an opportunity of laying it before that committee; I have given Mr. Skinner a copy, and would like others to see it.

Mr. Hume: We will just leave that over until this afternoon. We are to adjourn shortly, not to meet until 2 o'clock. We have a heavy lot of work before us, and it is always our object to carry out the program to the last items. Often I am not able to do it, but I always want to.

Mr. Skinner: Just a second, Mr. President. I do not think the resolution need be discussed at all. It says, cut the tariff in half; cut the tariff in half and make it 40 cents instead of 80 cents.

Mr. Hume: Mr. Hamlin was anxious to get further ideas before the people.

Mr. Skinner: It just amounts to the 40 cents instead of 80 cents.

Mr. Hamlin: Yes; we do not wish it

reduced over one-half. That was what the Ways and Means Committee intended. Senator Bryan writes me that the Ways and Means Committee would permit an amendment of the bill, so as to make a difference to us between 28 cents, which is the effect of the bill as now prepared, and 40 cents per box, estimated on two. And I therefore endorse the following resolution:

Whereas, a Bill has been introduced in Congress, or is pending before its Committees, materially reducing the tariff on many commodities, and especially on the importation of citrus fruits, and

Whereas, it appears that the intention of the committee that prepared the Bill was and is to reduce the tariff on citrus fruits fifty per cent. while in fact the Bill is so worded that its effect, if adopted as drawn, will be to make a reduction of at least sixty-five per cent; and

Whereas, the citrus growers of Florida expect and sanction a reduction on their products proportionate to the reduction on commodities which they most use and consume, so as fairly and justly to help reduce the present high cost of living throughout the country; and

Whereas, it is the opinion of the members of the Florida State Horticultural Society, composed of members from every portion of the orange belt of the State, in annual convention assembled, that a reduction of even fifty per cent is out of proportion to the reduction proposed on most other commodities and is likely to seriously cripple one of the greatest industries of our State, but realizing

fully the difficulties besetting our delegation in Congress in attempting to change a schedule proposed by the Ways and Means Committee and agreed to in caucus; and

Whereas, it has been represented to us that the extent of the reduction on citrus fruit is not fully understood and that, instead of a reduction from the present rate of eighty cents, estimated on the size of the Florida box, to forty cents, the proposed change would mean a reduction to twenty-eight cents, and that our delegation in Congress are willing and in position to advocate a rewording of the proposed Bill so that it may express the intent and purpose of the revision committee to make a reduction of only fifty per cent; be it

Resolved, that this society unanimously hereby respectfully request our delegation in Congress to unite in seeking such change in the wording of the proposed Act, by basing the rate upon the actual weight of imported fruit or by cubic contents, or other proper means, to the end that the actual reduction, based on the Florida box containing two cubic feet, shall not exceed fifty per cent. Be it further

Resolved, that the Secretary of this society at once transmit to each of our Senators and Representatives a copy of this resolution.

Mr. Prouty: I move the adoption of the resolution, and just give me credit for the three minutes I lost yesterday. If you jump in the water, you can't expect to come out dry.

Now, I never like to chase without a reasonable chance of getting something.

I had a great deal to do with getting

LaFollette elected; my daily paper did a great deal for him in his campaign. If I can get LaFollette to pledge me personally to see to it that we can have a square deal, you can bet your last dollar that we will get it. If I can get Kenyon to do it, we will get what is fair under the new conditions. Let us proceed, not by resolution, but by manipulation; by the science of pulling wires to make them give us what we should have. It can be done if you play your cards right. It is a game, this political business.

Mr. Hamlin: Just one word more. I have statements and correspondence with our Senators and Representatives, that it would be simply folly for them to go up against the Ways and Means Committee and the commission that has adopted this schedule. They propose to railroad it through, no matter what anybody says, and our people cannot afford to butt against this engine with what knocks they could bring.

But they say the Ways and Means Committee did not intend to reduce the tariff on citrus fruits more than 50 per cent. They intended to reduce it to 28 cents, based upon the number of cubic feet in the Florida box.

The letter I received from Senator Bryan yesterday asks for the adoption of some such resolution as this. This justifies them; puts them upon their mettle.

Two of the Representatives who work with Bryan have agreed to the same proposition. I have talked with Senator Fletcher personally, and I know he will not oppose it in any way, and I believe he will fall in. This does not stand in the

way of anybody doing something else or something more. This resolution does not ask that just 50 per cent. be adopted, and that we be given no greater protection.

Mr. Goodwin: I have tried to call attention to the pineapples. I have been fearing that possibly this tariff discussion would not be called up this session.

Our Representative in Washington is supposed to be here tomorrow; he is to read a paper. If we are going to have a resolution made by this Society, I would like to have pineapples included in some way, but there are not enough of us here to go into that matter.

Mr. Hume: Let me make a suggestion in connection with it, to dispose of the matter. Suppose you pass this resolution as it stands; then if you care to bring in a supplementary resolution in order to protect pineapples, we will see that it is put with it, and handled. Mr. Hamlin, does that meet with your approval?

Mr. Hamlin: Yes.

Mr. Bond: Mr. Hamlin has criticised that process which he calls "railroading." It means nefarious methods, and is a slur on the man who does it. Now, Mr. Underwood is the chief man on the commission. He carried the State of Florida last year, and we all knew well what his views were. He had been in Congress, chairman of the Ways and Means Committee. We all knew what was going on, yet the State of Florida endorsed him. His associates are honorable gentlemen, and I object to the term "railroading" being used in connection with those gentlemen.

Mr. Hume: Wasn't it Mr. Prouty who referred to the railroading?

Mr. Prouty: I do not believe I ever

used the word "railroading" in my life.

Mr. Hume: Those in favor of the resolution, will please stand up.

(Resolution adopted.)

BRIEF OF WM. CHASE TEMPLE.

Tampa, Fla. January 10th, 1913.

To the Honorable Committee on Ways and Means, House of Representatives, United States of America, Washington, D. C.:

William Chase Temple, of Tampa, Florida, temporary address, New Willard, Washington, D. C., appears as the accredited representative of the Florida Citrus Exchange, a co-operative, non-profit association of Florida citrus growers, organized under the laws of the State of Florida, and also as the accredited representative of the Board of Trade of Tampa, Florida, with a prayer to the Committee on Ways and Means of the House of Representatives that the present tariff on citrus fruits be permitted to remain as it is and unchanged, alleging that while in five years from the present time a reduction of the citrus tariff might be possible, that at the present time any material reduction in said tariff would mean the destruction and abandonment of the Florida citrus industry, which industry represents an investment of nearly one hundred million dollars, and an annual value of product of sixteen million dollars at the present time, with a sufficient citrus fruit producing capacity in acreage now planted to amount to fifty million dollars annually.

The citrus industry of Florida, as a commercial enterprise, dates back to the late seventies of the past century, the first semi-official statistics showing that Florida's production of citrus fruit of which record was made was 1884-5, at which time there were six hundred thousand boxes produced. (See California State Board of Agriculture Report of 1911.) This increased steadily to the season of 1893-4, when four and a quarter million boxes were shipped from the State of Florida. The crop of 1894-5 was variously estimated at from five to six million boxes, but practically the entire crop left on the trees the 28th day of December, 1894, was destroyed by freeze, and so many of the trees were destroyed that the crop the succeeding year, 1895-6, was only 147,000 boxes. This continued to increase gradually up to the present time, and it is estimated that the crop 1912-13 will amount to eight million boxes of citrus fruits, having a value estimated at sixteen million dollars, f. o. b. cars packing houses, in Florida.

No close estimate of the acreage planted to citrus fruits in the State has ever been kept, but from the best sources of information available, it appears that in 1908 there were at that time sixty thousand acres of citrus trees growing in Flor-

ida, and the new planting from 1908 to 1912, inclusive, amounts to twenty-five thousand acres, making at the close of 1912, eighty-five thousand acres of citrus fruits growing in Florida. Arrangements have already been made for the planting of fifteen thousand acres additional in the year 1913, which should make at the close of 1913, one hundred thousand acres of citrus fruits in Florida, provided the present citrus tariff is not interfered with.

It costs from six hundred dollars to one thousand dollars per acre to bring a citrus grove to bearing, the variation depending on the land selected, the price paid therefor and the cost of clearing it. Of this amount of from six hundred to one thousand dollars per acre, seventy per cent. represents labor. The value of the citrus groves in Florida, therefore, at the close of 1913 should be approximately eighty-five million dollars, of which nearly sixty million dollars represent the labor that has been put on them. These groves are owned by approximately eight thousand growers, and allowing five persons to the family, makes forty thousand people dependent directly on the income from these groves for their living, as owners and members of owners' families. In addition to this, the vast amount of labor required in handling the groves, picking, hauling and packing the crop, selling the crop, the manufacture of crate material and other packing material, will bring the total amount up to possibly one hundred thousand people, directly and indirectly dependent on the Florida citrus industry

for their living. For data as to crops from year to year, see the Annual Report of the California State Board of Agriculture for 1911; also the various Biennial Bulletins of the Commissioner of Agriculture of the State of Florida.

COST TO PRODUCE.

Domestic—

At the present time, the cost to bring a box of oranges to maturity averages in the State of Florida about fifty cents a box. Of this amount, sixty-five per cent., or thirty to thirty-five cents a box, is labor. The present bearing capacity, average per acre, of the groves in Florida is about one hundred boxes. This should be three hundred boxes per acre, and will be in a few years. Many of the older, better cared for groves show now in excess of three hundred boxes per acre, annual production. I have seen a grove with eleven hundred boxes to the acre, and I have seen a single tree with three hundred boxes of oranges on it in a single crop. In addition to the fifty cents a box cost to produce, (which fifty cents does not include interest on the grove nor any portion of the cost to bring the grove to bearing, nor the cost of the grove itself) the average cost of picking oranges is about nine cents a box, all of which is for labor. The average cost to haul the oranges to the packing house from the groves is six cents per box, of which four cents a box is for labor, making a *labor* cost per box on fruit delivered on wagons at the packing house of forty-five cents a box. The cost of handling the fruit from the

wagons delivered at the packing house into the cars at the packing house will average forty-five cents per box additional, of which about one-half, or twenty-two cents a box, is labor, thus making a total *labor* cost of sixty-five to sixty-eight cents a box of the oranges (including the raising of them) loaded in cars ready for transportation to market, out of a total cost of one dollar and ten cents a box.

The freight from packing houses to destination, as shown by the books of the Florida Citrus Exchange on the total shipments by it out of the State of Florida for the season 1911-12, was sixty-five and seven-tenths of a cent a box for the entire shipments of the Florida Citrus Exchange for the season of 1911-12. (See signed statement of the Traffic and Claim Manager of the Florida Citrus Exchange, dated January 3, 1913, file 3 T 76.)

Foreign—

The daily consular trade report issued by the Department of Commerce and Labor January 23, 1912, deals largely with citrus production in the Valencia district in Spain. This report is based entirely on the Spanish box of oranges, which weighs one hundred and sixty-five pounds net, and the cost given hereafter referring to foreign production divide the box cost given in this consular report by two, in order to reduce it to eighty-two and a half pounds of oranges net per box. The California box only averages seventy-two pounds net per box, therefore the Spanish box contains two and three-tenths California boxes in

net fruit. This consular report shows that it costs the growers in the Valencia district, including all charges of every nature and kind, including the rental for land, which amount of rental per acre (thirty-five to fifty dollars) is higher than the average profit per acre made by the Florida citrus grower—thirty-one cents a box on the eighty-two and a half pounds box to produce on the trees. The same report shows that these oranges can be—and are—taken from the trees, hauled, packed and delivered on board ship for thirty-five cents a box more, including all labor and material, making a total cost of sixty-six cents per box f. o. b. shipping port, and that the ocean freight to New York City is twenty-five cents a box additional making a total cost of ninety-one cents per box delivered in New York, as against the cost of Florida citrus fruits of one dollar and seventy-five cents per box, delivered.

Adding to the ninety-one cents foreign cost, delivered in New York, seventy-two cents per box duty, making a cost for the Valencia oranges of one dollar and sixty-three cents on board vessel New York, duty paid, as against one dollar and seventy-five cents from Florida producing points f. o. b. New York, or a lower cost for the foreign product delivered New York of twelve cents a box, even after paying the duty, than the Florida product.

SELLING PRICE.

The accompanying statement from the cashier of the Florida Citrus Exchange shows that the total amount received by the Florida Citrus Exchange for the

three years of its existence, for all its citrus fruits, f. o. b. cars packing houses, Florida, amounts to one dollar and sixty-three cents per box, this covering total shipments of more than three million boxes of citrus fruits for those three years, to which add the sixty-five cents average transportation charge, which will show a total amount received for the sales of the Florida Citrus Exchange of two dollars and twenty-eight cents per box f. o. b. destination for the three years. As the foreign goods can be brought in, as shown, at a cost of one dollar and sixty-three cents per box, including duty, this shows that the Florida Citrus Exchange has averaged for its citrus fruits, delivered, sixty-five cents per box more than the cost to import foreign oranges, even including the duty of seventy-two cents a box.

As the figures previously given show that it costs the Florida grower one dollar and seventy-five cents to deliver his fruit, and that he has sold it for the three years at an average of two dollars and twenty-eight cents per box, delivered, there remains an average profit of fifty-three cents a box to the grower for his fruit, from which must be deducted the selling cost of approximately fifteen cents per box, leaving a net profit to the Florida grower on the trees of thirty-eight cents a box average for the entire three years' life of the Florida Citrus Exchange.

This amount of profit is too small, and should be fifty cents a box, net profit to the grower, which amount of fifty cents a box net profit to the grower the Florida Citrus Exchange hopes to receive

for its growers as an average on this year's crop. In order to do so, however, it will have to increase its average selling price for this year twelve cents a box above that of the average of the preceding three years, which would make the average delivered price of Florida citrus fruits two dollars and forty cents a box, in order to produce for the Florida grower the fifty cents a box net profit on the tree that he should have to make a fair return on his investment. As it only costs the foreign grower one dollar and sixty-six cents a box, including duty, to lay his fruit down at Atlantic seaboard points, the Florida citrus grower will have to receive seventy-four cents a box more for his fruit in open competition with the foreign fruit at Atlantic seaboard points than the cost of the foreign fruit to import, including duty.

WHERE THE DIFFERENCE COMES IN IN COSTS.

First: Labor—

As shown, of the one dollar and ten cents that it costs the Florida citrus grower to put his fruit on board cars Florida packing houses, from sixty to seventy cents a box of this is for labor. The daily consular report already referred to gives in the Valencia district in Spain, average day's wage for women, twenty to thirty cents; for men, forty to fifty cents. In Florida, women are only employed in the packing houses, and the wages paid them are as high as those paid the men for similar work. How far the women are employed in the groves in Valencia I do not know, but I do

know that men's wages for grove work in Florida, even in the dull season, are not less than one dollar and a half a day, or from three to four times higher than the price paid for Valencia labor for men. In the harvest season, which is the busy season here, we are obliged to pay in Florida one dollar and a half a day minimum for the cheapest labor, up to as high as five dollars a day for the most skilled labor in the handling of citrus fruits. An expert and careful picker commands from two dollars and a half to three dollars and a half per day. An expert and careful grader commands three dollars and a half per day, while expert packers will earn as high as five dollars per day. It is fair, therefore, to assume that on an average, the Florida citrus labor earns at least four times as much per day as the schedule of labor charges shown in the daily consular report; therefore if the labor in Florida could be secured at the same rate per day as the Spanish labor, our labor cost of sixty-six cents a box could be reduced to from one-quarter to at least one-third of this amount, or a saving of from forty-five to fifty-one cents a box.

Second: Transportation Costs—

As the daily consular report shows a transportation cost from Valencia ports to New York to be twenty-five cents a box, and as the average transportation of the Florida fruit is shown to be sixty-five cents a box, there is a further discrimination against the Florida product of forty cents a box in transportation charges, making a total handicap of labor and transportation of approximately

eighty-five to ninety cents a box against Florida fruits in favor of the imported, or more than the total amount of duty now in force and asked to be continued by the Florida growers.

TARIFF—PROHIBITIVE?

It has been alleged that the present duty on citrus fruits is a prohibitive duty, and the only reason given for such a statement seems to be that there is a very small importation of foreign fruit. I beg to differ from this deduction, as the premise, I think, is a false one. The statistics herein given show that at the average price received by the Florida Citrus Exchange for its products, delivered, for the last three years, the importers can furnish their fruit at a cost of sixty-five cents a box less than this average price received, and pay the present duty; and I would beg to suggest that instead of the present duty being prohibitive, the fact stands out clearly that a profit of sixty-five cents a box to the importer is not in his opinion sufficient to warrant him in undertaking to deliver his fruit in the United States, and if sixty-five cents a box profit is not a sufficient profit to induce him to ship in here when fifty cents a box profit is all that the American producer asks, it would seem that the importer therein brands himself as being greedy, grasping and desirous of a profit far beyond that expected, demanded or required by the American grower. And this should be in itself an indication to your honorable body of what would take place should the American citrus industry be entirely

wiped out and the consumer left at the mercy of the importer.

If sixty-five cents a box is so meagre a profit for the importer that it is not attractive, and he had it all his own way, without the home competition to keep his prices down, what amount of profit, do you suppose, would he demand on his goods if he could set his own price, without domestic competition to keep it within reasonable limits?

GREED, NOT TARIFF, "PROHIBITS."

These figures plainly show that the prohibition against imported oranges is that of greed of the importer for inordinate profit, rather than the very modest amount of tariff now existing and requested by the domestic producer.

WILL THE FLORIDA CITRUS INDUSTRY EVER BE ABLE TO OPERATE WITH A SUBSTANTIAL REDUCTION OF THE PRESENT TARIFF?

My opinion is that if all goes well, and no such disasters occur within the next five years as did occur in 1894-5 in Florida, that in five years' time the Florida citrus industry will have become sufficiently developed to permit the cutting of the present tariff in half without seriously disturbing the future of the industry, and my reason for this is that economies can be shown as follows:

ECONOMIES.

First—

At the present time, the average cost to produce a box of oranges on the trees at maturity is fifty cents a box, and the average profit necessary for the grower

is fifty cents a box, making a total of one dollar per box on the trees for mature fruit. The present production is slightly less than one hundred boxes to the acre, and the fifty cents a box net profit on the trees to the grower will show a net profit of fifty dollars per acre for the grower, or just about the rent per acre in Valencia.

The normal, natural, average bearing capacity of a fully matured grove, properly tended for, should be three hundred boxes to the acre. This amount of fruit per acre can be produced in Florida at a cost of thirty cents a box, and if in addition to this thirty cents a box cost, the grower had a net profit of twenty-five cents a box, it would show him seventy-five dollars per acre net. And thirty cents a box cost added to the twenty-five cents a box profit would show a total price of fifty-five cents a box on the trees that the grower should receive for his fruit.

This, in itself, would mean a reduction of forty-five cents a box from the present amount that the grower must have to show a net profit of fifty dollars per acre, and the forty-five cents a box so saved could be taken directly from the present tariff without injury to, or at least without destruction of the industry, and without cutting the existing rate of wages.

Second—

It costs much less to pick a crop of fruit that will run three hundred boxes to the acre than one that will run one hundred boxes to the acre, for the fruit is thicker on the trees, and more boxes

per man per day can be picked, as he has to shift his ladder and tools less often. I have seen groves at the present time where the cost for picking alone was thirty cents a box, owing to the crop being very thin and scattered.

Third—

New plantings are being made with more and more judicious selection of location with reference to packing house centers, so that in the new plantings the haul of the fruit from the trees to the packing house will be less expensive, and in addition to this, experiments are being made with automobile trucks instead of horse drawn vehicles for transporting fruit from the groves to the packing houses, which appear to show very material saving on the hauling charges.

Fourth—

I think a spread of the co-operative ideas of handling and marketing the fruit of the growers by the growers' own organizations, and the central packing house idea, are becoming more and more developed, and it is probable that in ten years' time, from fifty to sixty packing

houses, judiciously distributed over the citrus area of the State, will be better able to handle thirty million boxes of fruit than the present five or six hundred packing houses are able to handle eight million boxes of fruit; and this will mean increased efficiency, better work and a lessened cost of packing the fruit.

Fifth—

If the transportation companies can be induced or forced to give to the Florida citrus growers the same ton per mile rate that the transcontinental lines now give to the California growers, their transportation charges can be cut in half; so that probably in ten years' time, under the natural growth and development of the business, the Florida grower might be able to compete with the importer with only a sufficient amount of tariff to suit even the importer's demand, or without any tariff at all. But that time certainly is not yet, and certainly will not be for some years, although it is perfectly reasonable that it may be in the near future.

Respectfully,

W. C. TEMPLE.

BRIEF OF L. B. SKINNER AND J. C. CHASE.

Jacksonville, Fla., Jan. 17th, 1913.
*To the Honorable Committee on Ways
and Means, House of Representatives,
United States of America, Washing-
ton, D. C.:*

Schedule C, Agricultural Products and Provisions. Paragraph 277: Lemons one and one-half cent per pound. Oranges,

limes, grapefruit, shaddock or pomelos, tangerines, one cent per pound.

The undersigned, L. B. Skinner, of Dunedin, Florida, citrus grower and accredited representative of Florida State Horticultural Society, (comprising over one thousand growers) Joshua C. Chase, citrus grower and member of the firm of

Chase & Company, Jacksonville, Florida, temporary address in Washington, D. C., New Willard, respectfully submit the following brief as an argument for the retention of the present duty on citrus products.

It is herewith stated that the arguments herewith submitted are not complete for the reason that other representatives of the important industry in Florida have appeared, or will appear, before this honorable body, whose time is too valuable to be taken up with duplications.

HOME LABOR.

Whatever may be the fact of the theory as to the benefits of protection in other lines, such as for instance steel and agricultural implements and many other articles whose value does not easily depreciate, the full force of the argument, which is admitted generally, applies with peculiar emphasis and certainty to such perishable products as fall under the general head of the citrus industry.

The chief and indispensable element in the production of citrus fruits is *labor*, both skilled and unskilled. It is herewith shown beyond question that labor (at very moderate rate of wages) is the largest element in placing in market a box of this fruit. Reference is here made to direct *labor* paid by the day, week, month or season. *Labor*, however, appears in numerous other forms. In truth, all the way from the clearing of the land to the delivery of the fruit to the consumer; in the various forms of cultivation, handling, local hauling, transportation, cost of box material, fertilizers, paper, nails, etc. *Labor indispensably is the essential factor in actual cost.* In support of these state-

ments, we submit for the careful consideration of this honorable body as exhibits, the copies of actual pay rolls duly attested, of marketing organizations, firms and individual growers. See Exhibits A, B and C, Packing House and Picking Pay Rolls, also Exhibit D, Cost of Labor in fifteen packing houses operated by Chase & Company, October 31st to December 31st, 1912, inclusive. (Unless the committee desires, we will not consume time of going into details that can be taken up at pleasure.) We state as an unquestioned fact that today in Florida all available labor is employed at higher prices than ever before. This has been true since the middle of October, and will continue to be true for weeks to come. Not only has all labor desiring to enter this field in Florida been steadily employed during the season, but it has been unequal to meeting the demand. As a consequence, thousands of men have been drawn to Florida from surrounding Southern and more Northern States. This has not been exceptional, but it has been increasingly the fact for some years and must continue to increase unless the industry is paralyzed by withdrawing the duty, which is now no more than the actual difference between the well paid labor of Florida and the poorly paid labor of foreign citrus producing fields, or an abnormal and destructive climatic change, which would produce the same results—with this difference, the loss caused by weather changes would be easily repaired, while that produced by eliminating the tariff would be permanent.

This is illustrated by the recovery in Florida from what at the time (1894-95) was called complete destruction, the crop

of fruit grown this year having never been equalled during forty years of active fruit growing.

The industry for whose growth and encouragement we appeal to this honorable body is not in any way exceptional, as some may suppose. It is now seriously proposed by large numbers, including many members of Congress, to protect the cotton grower from boll weevil, and the fruit and vegetable grower of the lower Mississippi Valley by the expenditure of hundreds of millions of dollars against what is a climatic change. Many communities in Florida depend almost entirely on the growing and marketing of the citrus crop, and the amount paid labor per day is reasonable, and any reduction whatever would work great hardship.

The honorable committee will be favored with a report showing labor conditions in foreign citrus countries to which we invite careful comparison with the figures here presented. We are informed that this subject has been treated fully and reliably by California representatives, and for that reason this phase of the subject is not here considered.

WHO MAKES THE PRICE?

Complaints have been made of the high prices of fruit paid by the consumer at various points, and it has been charged that the orange grower is grasping in his demand. *Nothing could be further from the truth.* It has been shown by exhibits already made by others and also by exhibits accompanying this brief that the average selling price by the grower and his agents in all the principal markets is low.

AVERAGE SALES FOR THREE YEARS.

Averages received by Chase & Compa-

ny. (F. O. B. packing houses.) Seasons 1909-10, 1910-11, 1911-12.

Oranges—

863,262 boxes; average-----\$1.455

Grapefruit—

251,832 boxes; average----- 2.639

Tangerines—

47,808 boxes; average----- 2.362

1,162,902 \$1.749

I hereby certify that the above figures are correct, and were taken from the records of Chase & Company.

From the above figures must be deducted the cost of selling, picking, packing, hauling and production, in order to show what the grower receives on the trees.

(Signed)

T. M. JONES,

Accountant.

These selling prices are the actual sales. To reach the consumer this fruit placed in market at prices that hardly compensate the grower for his outlay passes through the hands of the jobber and of the retailer and in the last stage, the hands of those who serve the fruit. Each one of these several classes demands an elaborate profit for his services, which involves comparatively small outlay on his part. This is not a matter of opinion, but of established fact, as the following exhibit shows.

(See Exhibit E.)

COST OF PRODUCTION.

There is no natural mine from which citrus fruits can be drawn when wanted and in quantity to serve the purpose, as is true of minerals and timber. To produce a box of oranges, tangerines, grapefruit,

or other fruit of this class, requires preparation of soil, time, and an outlay of money for several years. The amount of this cost cannot be exactly determined because of local conditions, and of the fact that machinery has never been considerably used, and from the nature of the case, we believe never can be. Let us say six years of continuous outlay has been involved and nothing marketable has been produced. From the time the product is ready for market a new expense account is opened, and one that contains many items, such as those for spraying, pruning, cultivating and general care of the grove. To all of these are added picking, hauling, packing, selling and other charges. Thus the cost of production to the grower is and always must be fixed.

FURTHER REASONS FOR RETENTION OF DUTY.

The safety of the consumer requires competitive venders. This condition we have and always have had to an admitted degree. The reduction of tariff would not reduce the price to consumer. The geography of the country is such that citrus growers on the Atlantic Coast and citrus growers on the Pacific Coast have not, and cannot, successfully combine, and the strongest kind of competition obtains between them. Certain territory on account of distance is more economically served by California, and on account of similar reasons, other territory better served by Florida. Foreign fruit has not been excluded by the tariff, but by the low prices at which jobbers are able to buy the home

grown oranges. The supply generally equals and often exceeds the demand.

DISTRIBUTION.

In order to show the wide distribution of oranges, the records of Chase & Company show that during the season of 1911-12, its car load shipments of oranges were disposed of in 147 different markets in 32 different States. During the present shipping season of 1912-13, which is from a third to half past, our orange shipments have reached 144 different markets in 32 different States. Here again in the entire course of the orange industry labor enters into the account, as railroad expenses are largely *labor*. The wide distribution of oranges shows that oranges are not prohibitive or high, that Florida orange growers are only holding their own, and not getting rich, proves that nothing should be done to injure the industry or even take a chance of doing it harm. Supply and demand regulates itself.

When the United States has large crops, growers must sell cheap; when light crops, their prices rule high. Importers can afford to bring in foreign oranges and keep prices reasonable. This makes it impossible for the American grower to manipulate and sustain extreme high prices.

Owing to the heavy cost of labor in Florida and high transportation charges, the Florida growers cannot reach foreign markets, whereas, the American markets are at all times open and available to the foreign producer.

In closing, permit us to quote an extract

from the second annual message of Thomas Jefferson, our third President:

"The prohibiting duties we lay on all articles of foreign manufactures, which prudence requires us to establish at home, with the patriotic determination of every good citizen to use no foreign article which can be made within ourselves, without regard to difference of price, secures

us against a relapse into foreign dependency."

Very respectfully,

L. B. SKINNER,

JOSHUA C. CHACE,

Representing Florida State Horticultural Society, Tarpon Springs Board of Trade, City of Largo, Florida.

Representing Florida Fruit and Vegetable Growers' Association.

EXHIBIT A—PAY ROLL.

TIME OF EMPLOYES AND AMOUNT DUE EACH FOR SERVICES RENDERED CHASE
 & CO., AT CRESCENT CITY PACKING HOUSE DURING WEEK ENDING
 DECEMBER 7, 1912.

NAME and OCCUPATION	TIME		PA'KI'G Boxes	Rate	Amount	TOTAL
	Days	Hours				
R. M. O'Neal, house worker--	5	12		2.75		17.05
D. P. Aikin, house worker---	7	9		2.50		19.75
C. W. Baer, house worker---	7	11 1-2		2.25		18.34
J. N. Woods, house worker--	6	14 1-2		2.75		20.48
W. B. Smiley, house worker--	7	15		3.00		25.50
R. L. Wilson, house worker--	7	9		2.75		21.73
Clyde Watts, house worker--	7	8		2.75		21.45
J. L. Mercer, house worker--	7	9		2.75		21.73
W. A. Journigan, house work.	7	6		2.75		20.90
B. A. Hancock, house worker-	7	9		2.00		15.80
L. Braddock, house worker--	7	14 1-2		1.25		10.56
M. R. Ewers, house worker--	7	14 1-2		2.25		19.02
C. E. Labass, house worker--	7	12		1.75		14.35
C. S. Clayton, house worker--	6	14 1-2		2.00		14.90
G. Blanchard, house worker-	6 1-2	11		2.00		15.20
C. Hawkins, house worker---	7	14 1-2		2.25		19.02
L. J. Peddy, house worker---	2	6 1-2		2.50		6.63
Jim Seymore, house worker--	6	14 1-2		1.75		13.04
Richard Keys, house worker-	7	14		1.50		12.60
E. C. Pennell, house worker--	7	14		1.50		12.60
J. T. Amrock, house worker--	7	14		1.50		12.60
Jim Bryant, house worker---	6	15		1.50		11.25
D. Miles, house worker-----	6			1.50		9.00
Rich. Roberts, house worker-	3	19		1.50		7.35
C. Velie, house worker-----		8		1.50		1.20
E. W. Kindrick, house work..	5	14		1.50		9.60
John Clements, house worker-	2	7		1.50		4.05
— Garrett, house worker--	4	12		1.50		7.80
H. Clayton, house worker---	5	14 1-2		2.00		12.90
C. McCain, house worker----	5	12		1.50		9.30
C. H. Stockton, house worker-						36.62
— Osteen, house worker---		3		2.75		83
Mrs. M. Baer, house worker-						10.00
Wade Johnson, house worker-	1			1.50		1.50
J. W. Waitman, picker-----			205	5		10.25
F. Brocker, picker-----			15	5		75
John Pree & Bro., pickers----			321	5		16.05
George Shelten, picker-----			190	5		9.50
Mose Nelson, picker-----			152	5		7.60
F. Gillens, picker-----			241	5		12.05
A. H. Grant, picker-----			190	5		9.50
Tom Baxter, loader-----	5			1.50		7.50
C. Brockington, loader-----	5 1-2			1.50		8.25
L. S. Turner, foreman-----	6			2.50		15.00

NAME and OCCUPATION	TIME		PA'KI'G Boxes	Rate	Amount	TOTAL
	Days	Hours				
— LaBree, teamster-----	5			5.00		25.00
— Padgett, teamster-----	16	1-2		5.00		82.50
John Edwards, loader -----	5	.5		1.50		8.25
Andrew Jackson, picker-----			246	5	12.30	
			56	7	3.92	16.22
			123	5	6.15	
John Wilson, picker-----			51	7	3.57	9.72
			164	5	8.20	
Calvin Pruden, picker-----			38	7	2.66	10.86
			120	5	6.00	
Ed. Walker, picker-----			34	7	2.38	8.38
			204	5	10.20	
Henry Pruden, picker-----			75	7	5.25	15.45
			181	5	9.05	
Bob Leason, picker-----			45	7	3.15	12.20
			193	5	9.65	
C. Dillworth, picker-----			42	7	2.94	12.59
David Hayes, foreman-----	6			2.50		15.00
Padgett, teamster-----	13	9		5.00		69.50
S. McFadden, picker-----			67	7	4.69	
			68	5	3.40	8.09
			76	7	5.32	
J. Trammell, picker-----			70	5	3.50	8.82
			57	7	3.99	
I. Moore, picker-----			54	5	2.70	
		7 1-2		1.50	1.13	7.82
Frank King, picker-----			44	7	3.08	
			74	5	3.70	
		7 1-2		75	56	7.34
W. A. King, picker-----		7 1-2		1.50		1.12
			87	7	6.09	
Walter Turner, picker-----			71	5	3.55	9.64
			62	7	4.34	
William Stark, picker-----			50	5	2.50	6.84
N. J. Funk, picker-----	5	7 1-2		1.50		8.62
Gadson, picker-----	5	7 1-2		1.50		8.62
Padgett, teamster-----	7			5.00		35.00

EXHIBIT B—PAY ROLL.

TIME OF EMPLOYES AND AMOUNT DUE EACH FOR SERVICES RENDERED CHASE & CO., AT MANATEE PACKING HOUSE DURING WEEK ENDING DECEMBER 14, 1912.

W. Goolby, packer & asst---		60		25		15.00
C. J. Gill, packer-----			500	5		25.00
Waller Willis, packer-----			400	5		20.00
W. K. Klein, picker-----			358	5		17.90
J. B. Henry, picker-----			315	5		15.75

FLORIDA STATE HORTICULTURAL SOCIETY

NAME and OCCUPATION	TIME		PA'KIG Boxes	Rate	Amount	TOTAL
	Time	Days				
John Stewart, picker-----			232	5		11.60
N. R. Voss, machinist-----	66			22 1-2		14.85
J. M. Marshall, receiver-----	66			22 1-2		14.85
Jonas Honsby, car loader-----	66			25		16.50
Louis Hopson, nailer-----	66			25		16.50
Tom Willis, box maker-----	60			20		12.00
S. A. Tomlison, box maker--			1360	1 1-4		17.00
S. Hall, packer-----	61			25		15.25
E. C. Curry, grader-----	56			25		14.00
H. Wiggins, stamper&truck..	51			20		10.20
Jon Desado, helper-----	62			15		9.30
P. Hood, grader-----	70			15		10.50
S. White, hopberman-----	62			15		9.30
C. W. Clark, packer-----	60			25		15.00
W. L. Turner, packer-----	20			20		4.00
Owen Ashe, helper-----	62			15		9.30

PICKING AND HAULING PAY ROLL FOR T. J. BACHMAN GROVE.

J. B. Holcomb, picker-----			36	6		2.16
L. Williams, picker-----			53	6		3.18
T. Green, picker-----			51	6		3.06
E. Kelly, picker-----			79	6		4.74
B. Goodrum, picker-----			38	6		2.28
G. Latson, picker-----			15	6		.90
E. Henry, picker-----			20	6		1.20
C. Williams, picker-----			34	6		2.04
J. Williams, picker-----			20	6		1.20
Jack Adams, picker-----			20	6		1.20
C. Creft, picker-----			20	6		1.20
E. Holloman, picker-----			24	6		1.44
J. B. Holcomb, picker-----			30	4		1.20
T. Green, picker-----			24	4		.96
E. Kelly, picker-----			36	4		1.44
B. Goodrum, picker-----			20	4		.80
L. Williams, picker-----			23	4		.92
T. B. Goolsby, foreman-----	3			2.50		7.50
Coarsey Livery Co., team---	5			5.00		25.00
Manatee Livery Co., team---		5		5.00		2.50
L. Scott, team-----		5		5.00		2.50
L. H. Goolsby, team-----		5		3.00		1.50

PICKING AND HAULING PAY ROLL FOR A. B. PETERSON GROVE.

E. Holoman, picker-----			35	3		1.05
T. Henry, picker-----			30	3		.90
C. Williams, picker-----			63	3		1.89

NAME and OCCUPATION	TIME		PA'KI'G Boxes	Rate	Amount	TOTAL
	Days	Hours				
B. Sanders, picker-----			37	3		1.11
J. Williams, picker-----			43	3		1.29
J. Adams, picker-----			46	3		1.38
C. Creft, picker-----			45	3		1.35
G. Latson, picker-----			34	3		1.02
L. Goolsby, foreman-----	1			3.00		3.00
Manatee Livery Co., team-----	1	2 1-4		5.00		6.25
Sroll, team-----		6 3-4		5.00		3.75
Coarsey Livery Co., team-----		2 1-4		5.00		1.25
L. Scott, team-----		6 3-4		5.00		3.75
Bridge toll -----						3.55

PICKING AND HAULING PAY ROLL FOR MRS. V. SMITH GROVE.

J. B. Holcomb, picker-----			29	10		2.90
T. Green, picker-----			63	10		6.30
L. Williams, picker-----			31	10		3.10
E. Kelly, picker-----			48	10		4.80
J. Adams, picker-----			10	10		1.00
J. Williams, picker-----			8	10		.80
C. Williams, picker-----			18	10		1.80
T. B. Goolsby, foreman-----	2 1-2			2.50		6.25
Manatee Livery Co., team-----	1			5.00		5.00
Coarsey Livery Co., team-----						3.00
Hauling 9 loads-----						7.65
L. A. Goolsby, foreman-----	1			3.00		3.00

PICKING AND HAULING PAY ROLL FOR W. ALDERMAN GROVE.

E. Kelly, picker-----			13	10		1.30
H. V. Coarsey, hauling-----						1.50

PICKING AND HAULING PAY ROLL FOR MRS. MARIAH BURTON GROVE.

Joe Adams, picker-----			21			3.95
Joe Adams, team-----			21			1.25

FLORIDA STATE HORTICULTURAL SOCIETY

EXHIBIT C.

WILLIAMS' GROVES; ORANGES, GRAPEFRUIT, TANGERINES—CRESCENT CITY, FLA.

Pay roll includes picking, hauling and all packing house charges.

Number of boxes packed and shipped November 9th to December 27th, seven weeks, 11,000.

Average per week, 1,571 boxes.

Pay roll week ending November 16th-----	\$242.75
Pay roll week ending November 22nd-----	347.48
Pay roll week ending November 20th-----	601.14
Pay roll week ending December 6th-----	706.90
Pay roll week ending December 13th-----	713.85
Pay roll week ending December 20th-----	566.00
Pay roll week ending December 27th-----	457.63
Total for seven weeks-----	\$3,635.75

Average per box for labor on 11,000 boxes, 33 cents.

Correct as taken from my books.

(Signed)

E. A. WILLIAMS.

EXHIBIT C—PAY ROLL.

TIME OF EMPLOYES AND AMOUNT DUE EACH FOR SERVICES RENDERED CHASE & CO., ON WILLIAMS' GROVES PACKING HOUSE DURING WEEK ENDING DECEMBER 20, 1912.

NAME and OCCUPATION	TIME		P'K'N'G	Rate	Amount	TOTAL
	Hours	Days				
V. L. Smiley, packer-----	5			2.75		13.75
J. F. Rhodes, packer-----	5			2.50		12.50
C. W. Atkins, packer-----	6			2.50		15.00
G. S. Atkins, packer-----	5			2.50		12.50
H. T. Parrett, packer-----	5			2.50		12.50
B. F. McCormick, packer-----	5			2.50		12.50
W. P. Allen, packer-----	5			2.50		12.50
C. Major, grader-----	1 1-2			2.50		3.75
L. Cream, engineer-----	4			2.50		10.00
G. Stockbridge, grader-----	5			2.50		12.50
H. D. Stone, nailer-----	5			2.25		11.25
John Weathers, nailer-----	5			2.25		11.25
J. M. Phillips, helper-----	5			2.00		10.00
M. Phillips, helper-----	5			2.00		10.00
R. Roberts, helper-----	5			2.00		10.00
J. C. King, helper-----	4			1.50		6.00
Otis Kusard, grader-----	4			2.25		9.00
C. E. Redland, helper-----	4			2.00		8.00
C. B. Bordens, helper-----	5			2.00		10.00
Dick Miller, nailer-----	5			2.00		10.00
John Edwards, nailer-----	1			2.00		2.00
W. H. Edwards, helper-----	1			2.00		2.00
E. O. Kemp, grader-----	5			2.00		10.00
J. E. Pavek, helper-----	2			2.00		4.00
J. O. Durham, helper-----	5			1.50		8.50

NAME and OCCUPATION	TIME		PA'KI'G	Rate	Amount	TOTAL
	Hours	Days				
J. W. King, helper-----	5			2.00		10.00
W. Slater, boy-----	2			1.00		2.00
John Slavis, helper-----	4			2.00		8.00
Mary Grimes, g. frt. cleaner- (Colored)	5 1-2			1.00		5.50
Melissa Ross, g. frt. cleaner-- (Colored)	5			1.00		5.00
Dina Nelson, g. frt. cleaner-- (Colored)	6			1.00		6.00
Lucy Howard, g. frt. cleaner (Colored)	5 1-2			1.00		5.50
Ida Williams, g. frt. cleaner-- (Colored)	6			1.00		6.00
Eth. Richardson, g. frt. clean. (Colored)	6			1.00		6.00
May Edwards, g. frt. cleaner--	6			1.00		6.00
Lela Crosby, g. frt. cleaner--	6			1.00		6.00
Variel Jones, g. frt. cleaner--	5			1.00		5.00
J. King, boss picker-----	5 1-2			2.00		11.00
A. Parker, boss picker----- (Colored)	5 1-2			2.00		11.00
A. Missin, g. frt. grader---- (Colored)	6			2.00		12.00
R. Missin, helper----- (Colored)	6			1.50		9.00
A. Westcott, picker----- (Colored)	5 1-2			1.50		8.25
Sid. Fair, picker-----	6			1.50		9.00
A. Cherry, picker-----	6			1.50		9.00
Joe Derr, picker-----	5 1-2			1.50		8.25
C. Morgan, (col.) packer----	5 1-2			1.50		8.25
A. Pruden, (col.) picker-----	4 1-2			1.50		6.75
O. Franklin, picker-----	4 1-2			1.50		6.75
Jim Gordon, picker-----	5			1.50		7.50
Paul Ford, picker-----	5 1-2			1.50		8.25
Ed. Middleton, picker-----	5 1-2			1.50		8.25
Chris Gibbs, picker-----	5			1.50		7.50
Fred Chatan, picker-----	5 1-2			1.50		8.25
Jim Macy, picker-----	5			1.50		7.50
— Sautchy, picker-----	2 1-2			1.50		3.75
John Small, picker-----	5 1-2			1.50		8.25
Frank Jackson, picker-----	5 1-2			1.50		8.25
C. Montgomery, picker-----	4 1-2			1.50		6.75
Dave Sparrow, picker-----	5			1.50		7.50
M. Cooper, picker-----	4 1-2			1.50		6.75
E. Cooper, picker-----	2			1.50		3.00
C. Middleton, picker-----	1 1-2			1.50		2.25
J. Jones, picker-----	1 1-2			1.50		2.25
Wm. Sanders, picker-----	1 1-2			1.50		2.25
Maj. Wilder, box maker-----	1500	Boxes				22.50
Sim Jones, (col.) teamster---	6			1.50		9.00
Fee Slater, (col.) teamster--	6			1.50		9.00
Wm. Reed, (col.)teamster---	6			1.50		9.00
Wm. Phillips, (col.) helper--	5			2.00		10.00

EXHIBIT D.

COST OF LABOR IN PACKING HOUSES OPERATED BY CHASE & CO., FROM OCTOBER
1ST TO DECEMBER 31ST, 1912.

DISTRICT	No. Boxes	Picking and Hauling	Cost per Box	Packing House Expenses	Cost per Box	Total Labor	Cost per bx
Arcadia -----	21117	\$ 3820.42	.181	\$ 2922.40	.138	\$ 6742.82	.319
Bridges -----	5707	786.08	.137	879.40	.154	1665.48	.291
Crescent City ---	25753	3457.20	.134	3934.58	.153	7391.78	.287
DeLand -----	11228	1601.92	.143	1551.17	.138	3153.09	.281
Fort Meade -----	4723	982.78	.208	650.54	.188	1633.32	.346
Fort Ogden -----	15309	2429.90	.159	1874.49	.122	4304.39	.281
Leesburg -----	15828	2265.06	.143	2905.19	.184	5170.25	.327
Manatee -----	10238	1277.05	.125	1599.52	.156	2876.57	.281
Maitland -----	3958	481.90	.122	498.63	.126	980.53	.248
Ona -----	6183	937.61	.151	975.20	.158	1912.81	.309
Orlando -----	10028	1457.26	.145	1738.43	.173	3195.69	.318
Thonotosassa ---	6347	1038.07	.163	1191.12	.188	2229.19	.351
Waldo -----	7540	571.27	.076	1060.99	.141	1632.26	.217
Wauchula -----	13671	2345.96	.172	1483.64	.108	3829.60	.280
Zellwood -----	1501	199.24	.133	324.07	.216	523.31	.349
Total -----	159131	\$23651.72	.149	\$23589.37	.148	\$47241.09	.297

EXHIBIT E.

FIGURES COMPILED ON AVERAGES OF THIRTY DIFFERENT MARKETS COVERING
PERIOD NOVEMBER 5TH TO 11TH, 1912. COVERING GRAPEFRUIT OF
GOOD QUALITY AND VARIOUS SIZES.

Growers' average price to jobbers, delivered
their markets, approximately per box----- \$2.50
Cost to grower, approximately per box:
 Cost on trees to raise fruit to maturity----- .50c
 To pick and haul to packing house----- .13c
 To handle, grade and pack in packing house,
 (including cost box and paper)----- .45c
 To sell fruit (averaging different systems)----- .15c
 Freight to market, approximately, per box----- .70c \$1.93

Grower's profit, approximately, per box----- 57c or 29 per cent.
Jobber's average price to retailers, hotels, restaurants,
 approximately per box----- \$3.10
Cost to jobber, approximately per box----- 2.50

Jobber's profit, approximately per box----- 60c or 24 per cent.
Retailer's average selling price per half dozen, 57c,
 figuring approximately per box----- 5.54
Cost to retailer approximately per box----- 3.10

Retailer's profit, approximately per box----- 2.44 or 78 per cent.

First class hotels and restaurants' selling price in half portions 18c, approximately per box-----	19.68
Cost approximately per box-----	3.10

First class hotels and restaurants' profit on grapefruit served in half portions, approximately per box-----	16.58 or 535 per cent.
First class hotels and restaurants' selling price in whole grapefruit services 1-2 30c, approximately, per box -----	16.40
Cost approximately per box-----	3.10

First class restaurants and hotels' profit on grapefruit served in whole portions, approximately, per box-----	13.30 or 429 per cent.
Second class hotels and restaurants' selling price in half portions 1-2 11c, approximately, per box-----	13.68
Cost approximately, per box-----	3.10

Second class hotels and restaurants' profit on grapefruit when served in half portions, approximately per box -----	10.58 or 309 per cent.
Second class hotels and restaurants' selling price in whole portions grapefruit 1-2 20c, approximately per box -----	12.20
Cost approximately per box-----	3.10

Approximate profit per box second class hotels and restaurants -----	9.10 or 293 per cent.
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Jacksonville, Fla., January 16th, 1913.

Mr. J. C. Chase, Jacksonville, Fla.

Dear Sir:—Attached hereto is statement showing approximate profits per box realized by growers, jobbers, retailers and first and second class hotels and restaurants on Florida grapefruit of good quality and various sizes during the period November 5th to 11th, inclusive, 1912.

This statement shows that the grower's profit per box was approximately 57 cents, or 29 per cent;

Jobber's approximate profit per box 60 cents, or 24 per cent.;

Retailer's approximate profit per box \$2.44, or 78.7 per cent.;

First class hotels and restaurants when selling grapefruit in half grapefruit portions, \$15.58, or 535 per cent.;

First class hotels when selling in whole grapefruit portions, \$13.30 per box, or 429 per cent.;

Second class hotels and restaurants when selling in half grapefruit portions, \$10.58, or 309 per cent.;

Second class hotels and restaurants when selling in whole grapefruit portions, \$9.10, or 293 per cent.

In figuring the average cost of the fruit to grower delivered in markets

we did not include the cost of grove or the interest thereon. In considering grower's gross profit during this period it must be remembered that during a large portion of the present season grapefruit has sold at lower prices than the average price figured in this statement, also that the grower cannot always figure on making a profit, as there are seasons of adversities and heavy losses.

The jobber's gross profit of 60 cents per box, or 24 per cent., is not unreasonable, although we believe that a jobber would be satisfied with a gross profit of a little less than this amount.

This statement clearly demonstrates that the profits of the retailers, hotels and restaurants are extremely unreasonable, and explains why it is that many times during a season the grower sells his product at a loss, and yet the consumer at the same time pays extreme prices.

At times when the supply of a perishable product exceeds the demand the grower or grower's marketing agent must sell the grower's product at a low price to the jobbers in order to effect distribution. At such times the jobber must work on close margins in order to force sales and dispose of the heavy receipts.

It is a well known fact, however, that at times when such conditions exist and the consumer should have the advantage of low prices, which in turn would create a very heavy demand and enable the grower to dispose of the heavy supplies, the retailers, hotels and restaurants hold their prices up and make very little, if any, cut in their selling price—figuring that as they are able to purchase at a low price their profits will be that much greater.

The information from which the attached statement was compiled was gathered early this season on grapefruit, and without any idea of using same in connection with tariff arguments.

We have never gathered similar information covering oranges, but feel very safe in saying that both the grower and the jobber realize a smaller profit on oranges at times when the market is in fairly good shape (as it was during this period on grapefruit) than they do on grapefruit; whereas the retailers, hotels and restaurants obtain about as large a percentage of profit on oranges as they do on grapefruit.

This statement clearly proves that if the tariff on foreign citrus fruits was removed, it would not benefit the ultimate consumer. It would, how-

ever, seriously affect the grower and those depending upon him for employment.

The importer could, without any tariff or with a low tariff, deliver foreign citrus fruits to wholesalers at prices which, while leaving a substantial profit for the importer, would mean ruinous losses to the American grower.

The fact that retailers, hotels and restaurants would be able to purchase imported citrus fruits at lower prices, and consequently American-grown citrus fruits at less than cost to the American grower, would not necessarily mean a material reduction in the cost of the fruit to the ultimate consumer, if any reduction at all.

This is proven by the attached statement, which shows the exorbitant prices being realized by the retailers, hotels and restaurants.

Any difference between the price at which foreign citrus fruits would be wholesaled and the present average price at which the American-grown fruits are wholesaled would be absorbed long before the fruit reached the ultimate consumer. This is demonstrated by the excessive profits being realized at the present time by the retailers, hotels and restaurants. It is the retailers, hotels, restaurants, clubs, dining cars, etc., who hold up the price to the consumer, and not the growers, growers' marketing agents or jobbers.

The removal or reduction of the tariff on foreign citrus fruits at this time would mean that the importers are put into the business on a large scale by the United States Government to the injury of the American grower and the American citrus industry—and ultimately to the injury of the American consumer.

As the importer could sell with a profit imported fruit at a price which would show the American grower a loss, it would be easy for the importer to work on a close margin until the American grower had been forced to abandon his groves.

Then, after the American citrus industry was wiped out of existence, the importers could regulate their importations by the demand and have it in their power to advance the price on citrus fruits until the consumer would pay a much higher price than ever before, regardless of whether or not by that time the retailers, hotels and restaurants worked on their present unreasonable basis or on a respectable margin.

When we have a large crop, or over-production, of products grown in the United States, it is necessary to dispose of same in the United States and

Canada. In cases of heavy crops abroad the consumer would not stand any chance of being benefited by same, as the importer could simply bring into the United States a sufficient quantity to meet the demand and hold up prices.

The fact that retailers, hotels, restaurants, clubs, etc., do not materially lower their prices at times when supplies are heavy, and growers are realizing very little, if anything, for their product, is now receiving the attention and thought of many who are interested in the sale and distribution of perishables.

The next few years will probably see considerable improvement in this respect, which will mean that while the grower receives a living profit for his product, the consumer will, at the same time, be able to purchase same at reasonable prices.

The first step in this direction has been taken by the United States Government putting into effect the parcels post.

Yours very truly,

CHASE & COMPANY
W. H. Mouser, Sales Manager.

Ornamentals

ORNAMENTAL VINES FOR FLORIDA.

John Schnabel.

Among the various classes of ornamental plants, I have chosen vines. This subject has often been touched upon in previous meetings of the Society, but merits much more extended consideration.

We have spent altogether too much time and money in attempting to acclimate vines that do well in the North and in Europe. If we had given the same attention to African and Asiatic introductions we would have had greater success. There is also a wealth of native vines far surpassing those from the North and Europe. These have been almost entirely ignored.

We have a wide field for choice of suitable vines for different localities and under different conditions. Different surroundings require quite different treatment. Thus, in selecting a vine for a piazza screening, the mistake is often made of choosing one with a too thick growth, which shuts off the air and sunlight to too great an extent, with the result that the piazza is damp and gloomy instead of dry and pleasant.

Climbing vines, either as rooted cuttings or seedlings, should be set in good soil, well cultivated, sufficiently watered, and well fertilized the first year, in order

to give them a good start. The soil should be spaded up well and mixed with well rotted manure.

VINES FOR EASTERN AND NORTHERN EXPOSURES.

Bearing this point in mind, I would select vines, especially on the east or north exposures, with a light, airy growth just sufficient to cast an agreeable green shade. The character of the soil must influence the selection somewhat. Among the varieties that would fill the conditions mentioned, the following can be recommended from my own experience, for the central and northern sections of the State:

Solanum jasminoides, with light blue flowers in clusters, and green glossy leaves. This can be propagated by seeds and by cuttings. The blooming is continuous throughout the summer.

Bignonia speciosa, one of the trumpet vines, with clusters of purplish flowers and glossy leaves, blooming through April and May, and easily propagated by cuttings.

Thunbergia fragrans, a perennial vine with white flowers. It does not make a

very dense growth, and can be propagated by seed.

The English ivy, *Hedera helix*, which requires training. I have never seen one in bloom in this State, but it is easily propagated from cuttings made in the winter. This well known vine is noted for the beauty of its foliage.

The wild "yellow jessamine," *Gelsemium sempervirens*, can be found growing abundantly in many localities in the woods and is easily transplanted, especially in its dormant condition in the fall. This well known vine blooms early in the spring, and is very fragrant.

The Japanese honeysuckle, *Lonicera japonica*, var. *Halliana*, with fragrant white flowers. This is a perennial vine that will grow under very unfavorable conditions. Propagated by division or cuttings.

Ipomoea fuchsioides, a fine climbing vine with reddish fuchsia-like flowers, easily propagated by cuttings made in the late fall. This plant was introduced by the United States Department of Agriculture. (Needs further description.)

Manettia bicolor, a vine of moderate growth, and short lived, especially to be recommended, requiring a rather moist soil. The flowers are scarlet tipped, golden yellow. Propagated by cuttings.

VINES FOR SOUTHERN AND WESTERN EXPOSURES.

For south and west exposures, vines with a little heavier growth may be selected, to protect the porch from the direct sunlight in the summer. For this purpose I will mention as desirable:

Solanum wendlandii, with very large,

deep green leaves. This vine bears light purple flowers during the summer. Propagated by cuttings made in the fall.

Bignonia venusta, a vigorous grower that is especially to be recommended for a southern exposure, as it will not stand much cold. If killed down by the frost it comes up from the roots in the spring. It bears clusters of orange-colored flowers. We have had good success with this vine at the Experiment Station grounds at Gainesville, especially during mild winters. I have had no trouble in propagating it by cuttings taken in the fall.

Rosa de Montana, or mountain rose, *Antigonon leptopus*, a vine with rosy to dark colored flowers. This is a well known vine, and one of the best for these locations. Propagated best by seeds, sown late in the fall or in early spring.

"Star jasmine," *Rhynchospermum (Trachelosporium) jasminoides* with leathery leaves which remain on the vine the year round. It blooms in March and April, with frequent white, star shaped flowers. This vine I can recommend most highly. It is best propagated by cuttings, but is one of the slowest to take root. For a heavy, quick growth I would recommend the "Kudzu vine," *Pueraria thunbergiana*, a rank and heavy grower, which sheds its foliage during the winter. It may be propagated by layers or from seed. Any of the *Stizolobiums* or velvet bean family may be used for a quick shade.

VINES FOR ARBORS AND PERGOLAS.

In making a selection for arbors or pergolas, the style of architecture, size, location and surroundings should be con-

sidered. I would recommend some of the ever-blooming climbing roses. These will require much patience, and one must be prepared for frequent disappointment. Our climate and soil are not well adapted to the best success with roses. There are many varieties of these, and in selecting suitable ones I would advise consulting some of the reliable nurseries in the State.

There are many varieties of *Wistaria* suitable for this purpose. A few of the Japanese varieties do well here, and can be gotten from almost any nursery. There are both white and blue varieties. The hardwood cuttings root fairly easily.

A few of the *Aristolochias*, or "Dutchman's pipe" do well here. I think the *A. grandiflora* and *A. elegans* would grow well here, although I have never had personal experience with them. The flowers are very large and curious. The *A. siphon* is the common variety in this State. They are mostly propagated by seeds.

The *Clematis* is a fine vine, especially the large flowering varieties, but I doubt if they will do well here. They are rather difficult to handle. The *C. paniculata* does well under half shade. It blooms in September. It is usually propagated by seeds.

There are a few *Ipomoeas* which do fairly well here. The *I. digitata*, or Mexican morning glory, has dark green, glossy leaves, differing in shape from the ordinary morning glory. It produces a tuber like the sweet potato. The large scarlet flowers are produced all through the season. It has done very well on the Experiment Station grounds. It is propagated by cuttings made late in the fall. It does not do well on all soils. Other varieties of morning glory, especially

some of the Japanese and annual varieties, are very subject to fungous diseases, and are liable to spread to the extent of becoming a nuisance.

Some of the *Passifloras*, or "Passion-flowers," especially *P. edulis* and *P. quadrangularis*, do fairly well here. *Bougainvillea glabra*, *Allamandas* of different varieties, and *Clerodendron* varieties are too tender for Central and Northern Florida, but in mild seasons they do very well. *Dolichos* and *Clitorias* are not to be highly recommended. Some of the vines mentioned for use on porches might also be used on arbors.

VINES FOR WALLS.

For vines designed to cover wooden walls, I would not recommend the clinging varieties, as they will eventually rot out the wood. This is also more or less true of any vine that retains its foliage the year round.

For stone walls, or brick or stone buildings, the clinging vines, or those that naturally fasten themselves to the wall should be selected. They may be grown also on trees or stumps. Especially desirable for this purpose is the Trumpet vine, a deciduous wild plant for Florida, propagated from hardwood cuttings. Among the plants for walls and brick and stone buildings I may mention the following:

The creeping fig, *Ficus pumila* Linn. (*F. repens* Hort.) Where this vine does well and gets a good start, it is one of the best creepers that can be selected. It also grows well over living or dead trees. On the station grounds we have found it very satisfactory. It does best in an eastern or northern exposure. It requires

considerable attention and cultivation to get it started. It holds its fine-leaved foliage the year round. After it is well started to a height of three or four feet, the young shoots that are not clinging should be pruned off, when clinging laterals will grow. As it gets older, the leaves get larger and it branches abundantly at the tips. It can be propagated easily by cuttings made from fairly well ripened wood, from four to six inches long.

The Japanese or Boston ivy, *Ampelopsis veitchii*, is a very handsome, well-known creeper. It sheds its foliage in the winter. It is a fast grower, clinging close to the wall. It is best propagated by seeds.

"Virginia creeper," *A. quinquefolia*, grows wild through the central part of the State. It has rather large leaves, which are shed in the fall. It is easily propagated by seeds or young runners.

Bignonia Chamberlaynii with terminal flowers, and *B. Tweediana*, with fine canary-yellow axillary flowers, make a splendid showing. The "trumpet vine," (*B radicans*) is a fast growing plant, with trumpet shaped flowers borne early in the spring. The Bignonias are easily propagated from cuttings made in the fall.

"Cross vine," *Bignonia capreolata*, is a native plant blooming early in the spring, with deep orange-colored flowers. It can be propagated from cuttings made in the fall or from the seed.

PROPAGATION FROM HARDWOOD CUTTINGS

Most of the vines, especially the woody ones, are propagated by cuttings. These should be taken late in the fall, from the current year's growth, from well ripened

wood, with not less than two buds to a cutting. The bottom end should be cut close to the bud, the top about two inches from the upper bud, which prevents the latter from drying out too quickly. The cuts should be slightly slanting, with a smooth surface. As soon as the cuttings are made, they should be set with one bud above the surface in ordinary garden soil. This must be well cultivated until the cuttings are well rooted, when they may be transplanted. They require no fertilizer but should be kept moist.

PROPAGATING FROM SOFT-WOOD CUTTINGS

Cuttings from the softer wooded varieties, such as the Solanums and the Ipomoeas, should be made late in the fall, before severe cold sets in. They should not exceed three buds to the cutting. They should be inserted in a box of clean, well-drained sand, not over three inches deep, and kept in a half shaded, warm place. The cuttings should remain here until rooted, when they should be potted into two or three inch pots. When a good root system has been established in these and danger from frost is past, they may be set out permanently.

PROPAGATING FROM SEED.

When the plants are propagated by seeds, these should be sown early in the spring. Select one part of decomposed leaf mold and mix it well with one part of good garden soil, with a little well rotted manure. Sow in boxes or pots which are not over three inches deep and well drained. The seeds should not be covered much deeper than the diameter of the

seed itself. On top, a thin coat of fine, clean sand may be put, to keep the seedlings from damping off. When the seeds have germinated, and have two or more leaves above ground, pot them in two or three-inch pots in the same mixture of soil as mentioned above. When they are well rooted here and danger from frost

is over, they may be set out in their permanent location.

The selections I have mentioned for various purposes might be considerably extended, but I have endeavored to confine my list to a few of the best only, and those that I have had personal experience with.

TROPICAL POSSIBILITIES OF FLORIDA, AND HOW TO ACHIEVE THEM.

Mrs. Marian A. McAdow.

The only part of the United States that dips down close to the tropical zone is Florida, with a comparatively small area of a little over 54,000 square miles. California has made a reputation for herself for many tropical characteristics, but it is because she can raise certain types of plants belonging to the tropics that will stand a low degree of cold, the past winter having proved most conclusively that many of them can stand 20 degrees below the freezing point.

Florida can grow not only these, but she can grow nearly every tree and plant that makes Ceylon and India dreams of tropical verdure. There may be some that cannot be suited with our soil and climate, but enough there are of a striking character to make a paradise of the spot that can produce them.

Over in California they have made the most of such tropical trees, shrubs and vines as will grow there and they have been planted so profusely that a visitor to that State comes away with the impression

that he has been sojourning in the tropics. If the people of our State were as much alive to their possibilities as those of California have been to theirs, we could have a wonderland here right now that would attract the attention of the whole world. Nor would it be the work of more than five to ten years to accomplish this transformation if we could all be imbued with the same idea, and every man, woman and child could be made to feel his individual responsibility in the matter. The club women all over our land are extending their interests yearly, and they have, without a doubt, accomplished some splendid reforms, but if the time that has been spent on courses in "The Music of Shakespeare," "The Poetry of the Brownings," and "The Art of the Renaissance," were expended on the practical every-day necessities of the community in which they live, we wouldn't have range cattle and razor-back hogs roaming our streets, creating disease by their filth; we'd stamp out typhoid fever and malaria; we'd eradicate

the hookworm, fly and mosquito; we'd have rigid laws and see that they were enforced that would not permit paper and fruit skins to be thrown in the street; there would be no untidy back yards and alleys cluttered up with old boxes, barrels and tin cans, and broken crockery and bottles.

We'd have a compulsory school law that would protect the interests of children whose parents are too ignorant and indifferent to be entrusted with the welfare of their offspring; we'd have improvements in our public school system and in provisions for the insane and imbecile and other incompetents.

We'd insist on having competent medical examination for our State charges, and where an operation, some dental work or optical attention were needed, we'd compel these things to be done instead of fostering and supporting criminals who might be made into honest citizens by receiving intelligent medical attention. This may seem like a far departure from the topic of tropical gardening but it is not often we club women can find a chance of telling you men about our aims so that we can get your co-operation to accomplish our ideals, and when such a chance presented itself I couldn't forbear from grasping the opportunity.

These are some of the practical crying needs in our State today, that we club women may meet and transform to our ideals if we but combine our forces and work toward one end.

There is no small town or farming community that does not contain at least three intelligent, energetic women, and no more than that number is needed to

make things go if they make up their minds to have them. Organize if you have but three members, and while you are waiting for more you can be doing a few things that will leave an indelible mark in your wake, if you choose to make it so.

The particular line of work that I wish to dwell on in this paper is the part that we women may take in developing and beautifying the spot we live in. First I'll take up the possibilities of making a tropical fairy-land of Florida, and the way to go about it to achieve our ideals. I mentioned the results that California has accomplished by comprehending her possibilities and then putting them into execution so often and on such a grand scale that thousands of our country's wealthiest men have considered that State the ideal place for making their final home after retiring from the activities of business life.

Last summer I went out to California after attending the horticultural meeting in Miami, and although I had pictured to myself just what I should see there, the effect of the real thing at close range was such as to rouse in me a tremendous feeling of admiration and appreciation of what educated brains can do, and with this inspiration I came back imbued with a spirit of emulation to get even greater results from the greater resources that are ours.

Good roads will have more to do with Florida's rivalry to California than any other agency that lies within the province of man's control and to the men we leave this problem (although if it were neces-

sary I believe we women could build some good roads, too).

From the agitation that we constantly see in the press relative to the necessity for and the value and comfort that good roads mean to a community, I haven't the least doubt of seeing not only our own State, but every other State in our Union, covered with a network of first class highways inside of five years. Residents of the New England States will motor between their summer homes in the North to their winter homes in Florida, along an ever shifting roadway scene enlivened with the rich autumn tints of the northern woods, dissolving gradually into the soft purples of the more Southern States until tropical Florida, with her feathery palms and balmy air, bids them tarry until Mother Nature lifts her magic wand and they roll back over a newly awakened earth bedecked with dogwood, laurel, rhododendron, peach and apple bloom set in the vivid green of spring's emerald robe. Next to good roads, the greatest attraction we can offer (outside of our balmy climate) is a tropical environment that appeals to one's sense of beauty as does no other, and the reason for this I am unable to give. To make this tropical environment we must know what to plant to accomplish this end. The list of trees and plants that follow are peculiarly tropical in their appearance and suggestiveness. Let it be understood that many are left out that are most beautiful, but these may be included by any who wishes a more complete line of tropical plants than I give, and to those I wish to call attention to a most comprehensive list that is included in the paper submitted by Prof. Charles

T. Simpson in the proceedings of our Society for 1912. Professor Simpson has this fine work under a separate cover now, and it may be obtained by writing him at Little River, Florida.

All members of the Palm family stand first in the list of desirable trees for tropical effects. Best among these are Washingtonia robusta, all of the Phoenix palms, all the Cocos, the Palmettoes, the Royal palms and two Sago palms. In this list are thirty-six different trees having at least three different characteristics as to leaf formation. In California one sees almost exclusively three different Washingtonias which are so much alike that a novice in plant knowledge would not detect a difference. Then comes Phoenix sylvestris, and a limited number of the Cocos types. Over there they are compelled to limit their types, but here we have a much greater range of choice, and those I named may be, and should be, used extensively for street and park decoration, as well as for the grounds of residences. All the Rubber trees may be used south of Lakeland, these being quite tropical in their requirements and sensitive to low degrees of cold. Magnolias do well in many parts of the State, and make noble trees when full grown. Bamboos do exceedingly well here, and varieties may be found that grow luxuriantly in all parts of the State. The Royal Poinciana and blue Jacaranda are two trees whose merits cannot be overrated where the temperature does not fall lower than 28 degrees in cold weather.

Among rare tropical trees that have been tested by Professor Simpson and found to do well in his locality are Kige-

lia, Spathodea campanlata, Terminalia catappa and Butea.

Others that might be tried are Saraca Indica, Amherstia, Colvillea, Brownea and Laegerstromia tomentosa. These are the trees that lend enchantment to Ceylon and India, and as India is frequently visited by low degrees of temperature, where the thermometer drops from 2 to 4 degrees below the freezing point, we should be able to grow anything that stands that much cold in that country. Of course this means that only the southern part of Florida might be able to grow these last named varieties.

After these come plants that possess peculiar forms that attract attention by their difference from the regular formations of trees and plants. Among these are the Agaves, Yuccas and Fourcroyas. There are many varieties in this type of plant, and some of them have indescribably beautiful blooms of most majestic mein. They are easy to grow and adapt themselves readily to any and all characters of soil. The night blooming Cereus and several other cactus plants that are very floriferous lend a quaint note to our tropical flora. Two or three varieties of tree fern make attractive specimens where shade, moisture and rich soil are provided for them. To my way of thinking, the Banana, the Ravenala, and a large leaved variety of Strelitzia are incomparable in producing tropical effects, and closely allied to these are the Alocasias, whose immense leaves suggest the rank luxuriance of tropical jungles. Where these grow, the Caladium, with its matchless coloring and graceful bearing, may be added. Papyrus, a tall growing grass, with an odd and

feathery bloom, may be worked in most effectively, especially in a small garden.

For climbers to cover the trunks of palms having leaf shields, are Pothos, with its great green leaves blotched with white and pale yellow; Monstera, with large leaves deeply cut and cleft; Nephthytis, with leaves quite as curious; all these form striking objects of beauty while still quite young.

All the Tecomas and Bignonias do well in Florida and furnish a great variety of color, having white, pink, red, yellow and orange colored flowers.

In California one sees the purple Bougainvillea until it palls on the eye. A far handsomer variety has a bloom of a peculiar red shade, but it is difficult to make grow and is quite rare and expensive. Some shrubs that I did not find in California that are superb for color effects are the Acalyphas in five or six varieties. and where these grow the Croton will stand outdoor conditions in the winter. The Hibiscus, in at least a dozen varieties, is a royal flowering shrub, and one that is almost a rival is the dwarf Poinciana, which flowers in one year from seed and has as brilliantly colored a flower as its tree-relative, with the advantage of being almost a constant bloomer. No garden should be without its night blooming Jessamine with its rich perfume so suggestive of the charms of the Sunny South.

In this list are something like 200 trees, plants and vines. If only a few of these were to be found in each dooryard, imagine the picture of beauty that would gladden the eye. It lies within our power to create it if each person would do his

individual part in making it. The club women of Florida can work this magic in our environment in short order, if they'll try to do it. Three women in any community is all that is needed to start the ball rolling. Three women can make forty men so uncomfortable by their never-ceasing prodding that they can accomplish any civic reform they set their hearts on. I know this because I've seen it done, and I've seen just one woman do it. It doesn't really need three.

The Florida Grower has an editor who took it into his head after his visit to Miami last summer, to see the State of Florida as resplendent with the gorgeous blooms of the Royal Poinciana as was the charming city that entertained our Society last May.

He set about finding seeds in large quantities, and offered them through his journal to those who would plant them, and by the success of his scheme he's in a fair way to see his ideal realized in the next five years. This gentleman had a broader field for his endeavor than most of us have, but there isn't a newspaper man in the State who might not have done the same thing long ago if he wanted to beautify his State and recognized his possibility for doing so.

As club women it lies within our power to distribute far and wide in our vicinity seeds and plants; and not only to do this, but to take up the study of artistic planting to get the best results from the means at hand. Magazines and photographs suggest ideas to be copied, and these should be saved and kept on record for use when the right time comes. I am hoping some day to run across some civic reformer

who may be called on and paid for his services to give illustrated lantern lectures on artistic homes and gardens. It doesn't cost any more to build an artistic home than it does an ugly one, but it needs education along these lines to get architects out of the old rut and their patrons enlightened on the possibilities of their resources, and then we will have as much to be proud of as California has.

Can you imagine anything uglier than the average country school house? If you've ever seen the attractive school houses designed by Gustave Stickley, of "The Craftsman," you'd know there is no excuse for the atrocities we house our children in and allow our taxes to be used for. A soft brown, green or orange stain softens a rough exterior into tints that never offend the eye, but do we think of remonstrating against the ugly dirty-gray paint that is so often used to paint the outside of the average school house built of wood?

Occasionally one runs across a cement block house which paint cannot mar, but this can be built on as ugly lines as the wood box type. This is a good line for some reform work, but we must have an ideal to present before we can accomplish much.

For several years this desire for more artistic homes for the working man and his family has been stirring in me, and I have accumulated quite a lot of material from magazines and journals that have interested themselves along these lines. This same thing may be done by a body of club women and in a short time a great quantity of matter may be gathered and used as it is needed or demanded. There

are many excellent publications that give designs and instructions for building individual and artistic homes, which might be subscribed for and kept on file in the club rooms. The little kodak is a friend that can be of unlimited value where club members are visiting in different parts of the country and have the opportunity of bringing back photographs of artistic homes and public buildings that have something unusual to recommend them.

In my own town our school association bought sixty tropical trees for the grounds of our new school house. We had a man hired to prepare the holes for these trees, and then I went up to the school and taking three or four children for each tree, had them set it out, gave them a little talk about its character, the feeding and watering of it, then numbered it and painted its name on the fence close by, and recorded the names of the planters in a book kept for that purpose. We have just finished a fine cement walk of 400 feet along the street in front of the school grounds, and we plan to have the sod between the walk and the fence broken up and divided, so that each room may have a certain number of feet to plant in low growing annuals next fall. We will probably use such plants as Nasturtiums, Candytuft, Phlox, Verbenas and Gaillardias.

At different times we have bought seeds of tropical trees, made them up in small packets and distributed them among our 250 white and 100 colored children. These seeds were also sent to ladies in the town whose homes showed an interest in flowers.

This work lies within the compass of any one woman to perform or for a club

to take up, and where it becomes the interest of an organized body of a few or many women results should be multiplied accordingly.

Our town council has plans for planting each street with one kind of tropical trees, and the property owners along the streets have agreed to stand the expense for this themselves. Years ago this might have been done if we had not permitted stock to run at large and eat up hundreds of dollars worth of fine shrubbery. This regulation of stock must be met by any community that wishes to beautify its streets, parks and residence grounds. The women can force this issue as easily as the men.

With the suggestions that I have outlined, the smallest hamlet may start in, working along lines that are capable of changing the whole face of Florida in five years' time.

The spot in every town that carries the most widespread influence is the railroad depot and its grounds. First impressions, or those we get in passing through a strange place in a train, often influence us in favor of or against a town. An attractive and artistic greeting from a railroad train will pay a larger return on the investment than any other outlay of money and time.

Co-operation and a few ideals will accomplish all that you and I desire for our Sunny Florida.

DISCUSSION.

Mr. Hamm: I wish to endorse this paper and say that Palatka has the advantage of having a Woman's Club just

as this lady speaks about, and we have no one else to thank but Mrs. Kate Gay. We have some of the prettiest parks there are in the State of Florida.

Mr. Skinner: Those of us who have been in California are the only ones who can fully appreciate Mrs. McAdow's paper.

I think it would be a fine thing if that paper she has just read were published in every paper in the State. I move that the Secretary be instructed to have it published in some paper, and that every paper in the State be requested to copy it.

Motion seconded and carried.

Mr. Hume: Mr. Painter, you are instructed to look after that matter. Any further discussion on this topic?

Mr. Prouty: About a year ago I wrote a check for a Southern Homestead for my wife. She followed out in advance the suggestions and carried out the possibilities that have been outlined in the paper just read. Today, our place is one of the most beautiful in that part of the State. People drive by to see it. Two families have decided to move their houses in our neighborhood, influenced by these improvements, and we have never said a word to them.

The same lady has been instrumental in having the school house moved, and it is being covered with paint and ornamented on the inside, and the playground and the yard is being fixed up so as to outvie the attractions of a city.

It is not necessary to have a city home to have it beautiful.

I mention these things to emphasize the possibilities of the lady's paper as

within the reach of everybody who lives in the country. We lived in Chicago over twenty-five years, but would not trade our beautiful Southern home, with the people we have for neighbors, for the whole, blooming old Chicago.

Mrs. Prange: I want to make a little explanation that I think may be of interest. We all agree that Mrs. McAdow handles the subject of ornamentals extremely well. It was left to a gentleman at Miami to explain why. He said it was because she was so ornamental herself. (Applause.)

Mr. Skinner: When I came back from California, I went down to Mr. Reasoner and bought some palms. My experience with palms is that they stand still a long time before they start. I stopped at Mr. Brown's place that day and he had a beautiful one there. He said it stood there two years before it hardly made a leaf. When I bought this from Mr. Reasoner's man, I said, "Isn't there something I can do to make them grow right away?" He told me, "If you dig a \$5.00 hole and put in your 25-cent plant you will be assured of the result." Fertilizer is what is needed. If you are going to plant palms, you have to make the soil rich underneath; that is what you have to do.

Mr. Pierce: This last two years I have been played out, so I have been putting out flowers. I have been carrying some mighty nice bouquets in town, and I was amply repaid by the smiles from the good-looking ladies I gave them to. But the old lady thought I was putting in a good lot of time gathering those flowers

for those ladies (laughter), so I told her to come on to town with me and take the flowers into the store where several nice looking girls were clerking. She did so, and the old lady has not had anything to say, since.

A young man in town wanted to buy some from me, and I told him I guessed there was half a dollar's worth of smiles in the bunch. I told the old lady I had sold 50 cents worth of smiles.

Irrigation of Citrus Groves

F. W. Stanley.

U. S. DEPARTMENT OF AGRICULTURE

Although I have spent several years on the large irrigation systems of the West, I had to come to Florida to see *all* the different forms of irrigation going on within a few miles of each other. For example, in the little county of Manatee you can see spray systems of all kinds and descriptions—such as the overhead systems of parallel pipes commonly known as the Skinner system, as well as systems of vertical pipes, each bearing a spray nozzle of some kind, such as the old Blake nozzle, fish-tail, Perry nozzle, Campbell nozzle, or McGowan nozzle, and various modifications of the above—all have their advocates, and all answer their purpose, the purpose being to make it rain, when nature wants a rest. Then in this locality we have the Sanford tiling system of sub-irrigation and the Hastings open furrow sub-irrigation system, and the various methods of running water on the surface, where a great deal of individual genius is brought to bear. Most of these systems are applied to truck farming.

But this subject is so broad and time is so short, I must specialize. I must confine myself to one particular phase of the subject, namely, "Irrigation of Citrus Groves." I have not time to go into

the need of irrigation, as this means a comprehensive study of the rainfall, character of soil, depth of subsoil, position of hard-pan; topography and temperature, drainage, etc. But you all know that droughts of from 30 to 50 days are common in the spring time, and that this is the time the young fruit will drop and burn if the soil becomes too dry. Dr. Drennen, of Orlando, with whom the Department of Agriculture is co-operating, has had his plant installed since 1906, and has found irrigation either necessary or beneficial every year with the exception of last year, and has not irrigated this year to date. But if the present weather conditions continue, this year will prove no exception to the rule. In the long drought of 1906, while the plant was still under construction, Dr. Drennen succeeded in getting water on only one-third of his grove, and that late in the season. The next year this one-third bore more than the other two-thirds, and brought a much better price in the market. Not only this but he lost 100 trees on the unirrigated section, which would nearly pay for the price of installation. Of course this is very exceptional, but with a \$1,000 an acre proposition we can afford to make some

expenditure to deal with exceptional conditions. The next proposition of importance is the *kind* of plant. Here we stir up a multitude of questions. But we all agree the *best* plant is that plant which is the cheapest to install, and at the same time is durable and answers its purpose of applying water to thirsty trees. There is little doubt that the cheapest plant is the one that delivers water at the highest points of the grove, and supplies water in furrows in the middles. This is almost self-evident, as this eliminates expensive pipe lines that are necessary if water is supplied by hose or spray to all points irrespective of grade. Right here most of you will say, "Oh, that may be all right in the West, but the sandy soils of Florida are a different proposition." You will say this system will saturate the upper end of the farm and insufficiently water the lower end—or perhaps fail to supply any water at the lower end at all. I am not qualified to say that this is not true in some cases. But I am qualified to say that water can successfully be run in open furrows in some of the sandy soils around Orlando, at Tampa and at St. Petersburg, and in the shallow soils of Bradenton and Palmetto. Because we have been able to make actual tests at these points; and again I can safely say that in most parts of Florida water can be run on the ground if the plant is laid out properly. The secret of success lies in having your pipe lines located on the high points of the orchard—even if the lines wander about in a most bewildering manner—and having the power to turn enough water in each furrow so as to have suf-

ficient head to reach the end of the furrow in a very short time, and although a few gallons a minute in each furrow may run for days and not reach fifty feet, twenty to 100 gallons per minute in the same furrow will often reach the end in ten to twenty minutes. We have proven this in several cases, most notably in the Drennen grove at Orlando. In this grove we have eight-inch, ten-inch and twelve-inch vitrified clay pipe, laid on the highest ridges, and running water in both directions from the pipe lines, the water running from 400 to 600 feet without trouble. The water is supplied from a large lake; pumped into a stand pipe on high ground through two steel pipes; thence the water is distributed through the forty-five acre grove by means of the vitrified clay pipe mentioned above. The water is let into the furrows by means of six-inch low pressure valves, located in every tree row. The pump supplies about 500 gallons per minute, and one man can irrigate ten acres a day, and not supplying over one inch to one and a half inches of water to the soil—and all this is on deep, sandy ground.

I spoke of cost and durability. The cost of such a plant, including pump and engine, should not exceed \$50 an acre. As for durability, terra cotta or cement pipe will practically last forever, which is far from the case with iron or steel pipe.

The department of Agriculture, under the direction of Mr. Williams, surveyed the Walter Drennen grove at Maitland, and made an estimate of less than \$33 an acre to supply the distributing system

to his 150 acre grove. This does not include engine or pump. This system will need 4,830 feet of fifteen-inch vitrified clay pipe, 4,650 feet of ten-inch vitrified clay pipe, and 150 six-inch low pressure valves. I have not time to describe this furrow system completely, but you who have visited the orange groves of California will understand it perfectly. The general idea is to eliminate the high pressure iron and steel distributing lines, where the greater part of your power goes to overcoming friction, and put in large low pressure pipe, such as terra cotta sewer pipe or concrete pipe, and convert this friction factor into water. For example, I have visited a grove irrigation system that needed forty or maybe 100 foot head pressure to overcome internal friction and give sufficient spray, while a twenty-foot head would suffice if a twelve-inch pipe was used, instead of three-inch or four-inch iron pipe, and water was run down furrows instead of through one-inch to one and a half inch sub-lateral pipes. This would mean five times the water placed where it was needed, as we know that if a ten-horse power engine will lift 100 gallons per minute 100 feet, it will lift 500 gallons per minute 20 feet, and 100 foot head is 100 foot head, whether lifted vertically or in overcoming friction in small pipe or converting water into spray.

I mentioned cost of installation. From many actual plants of the hose or spray system, I find that \$150 an acre for installation is not unusual, where the same plant could be installed for one-third this amount. I also know of places where it takes five men to irrigate eight acres

in one day while one man should easily irrigate this amount if run by large pipe and properly placed valves. Of course this does not apply to the plants where a spray will simultaneously cover all the orchard—which is too expensive for most growers. Again it is often advocated that the furrow system saturates the ground, causing devastation when followed by heavy rains. We find water can be applied to cover ground only one inch deep by this method in the places mentioned above. In any case, good drainage is necessary, and good drainage is assured in the majority of Central Florida groves that are on high and rolling ground. It is doubtful whether an additional one inch of rain will cause ruin, while it is easily possible to conceive of cases when one inch of water will save or improve half of next year's crop.

I would like to say a few words concerning the actual irrigation at the Drennen grove. Here, as explained, six-inch low pressure valves are situated at every tree row on the high ground. The 500 gallons per minute is divided into six or seven middles, each middle having three to four furrows running parallel three to four feet apart, the valves supplying about twenty-five gallons per minute to each furrow. The water is run in each middle from one and a half to two hours, which supplies one inch to one and a half inches of water to the ground. The water in each furrow can be regulated without trouble by means of the valves, and if more complete control is needed, a three-inch galvanized steel pipe—24 gauge—having little sliding gates, can be attached to the valves,

which absolutely controls the water in each furrow.

In conclusion, I wish to state again, that I do not say this system can be used in all cases, but do say that thousands of dollars can be saved in installation of grove irrigating plants if a thorough study is made of local conditions. Most of you can make your own tests by running a furrow in your orchard and letting in twenty-five to 100 gallons per minute, and prove for yourselves the plausibility of the plan.

I also wish to make it plain that I am employed by the Department of Agriculture to investigate and suggest better methods of irrigation throughout the humid sections of the United States, and that we have no one special system in all cases, but attempt to adapt irrigation to conditions of soil and climate. We have nothing to sell in *any* case, and any companies that are putting out good systems of irrigation that tend to improve conditions, are doing a big work. But we do hope to save farmers a great deal of money by making tests that are impossible to an individual or company. I hope to get in touch with any of you that wish help in this matter, and will do all in my power, as far as I am able under the rules of the department in any case. By addressing Irrigation Investigations, Department of Agriculture, you will receive a prompt answer.

DISCUSSION.

Mr. Hume: Are there any questions you would like to ask?

Mr. _____: I would like to ask

if you run two or three furrows in the intervals between the trees, how far the water would run.

Mr. Stanley: It depends on the depth of the hard pan and the soil and the grade. It usually runs down in about fifteen minutes, and then you can regulate the water, of course, so that you can put on the right amount.

Mr. _____: Does that water spread all out through the land?

Mr. Stanley: No, it does not; the water tends to go down very rapidly.

Mr. Rolfs: How many furrows do you have?

Mr. Stanley: About three there, because the trees are too large to get more. Down at St. Petersburg they get about six.

Mr. Gillette: Do you get as much at the far end of the furrow as at the upper?

Mr. Stanley: No, of course not.

Professor Rolfs: How far down before the water meets?

Mr. Stanley: That depends on the soil. In Manatee it will meet in a few hours, because the hard pan is not very deep.

Mr. Rolfs: If your trees are twenty feet apart, you would recommend putting in five rows, and they would have to be at least three feet apart. Now, suppose you had them three feet apart, how far down before the water would meet?

Mr. Stanley: The water goes down very rapidly, and I cannot tell you exactly on that point. We had intended carrying on experiments to determine this, but it has rained so that we have

not had opportunity to carry them out. Those made a few years ago showed that the water went down six feet before meeting. It usually meets within a couple of feet of the surface, but it does not make a great deal of difference whether it meets or not. You can make it meet if you run a whole lot of water to thoroughly saturate the ground.

Professor Rolfs: Then it does not saturate the soil, as ordinarily used?

Mr. Stanley: You can saturate the soil if you wish. You can put your furrows a foot apart.

Mr. Felt: I have seen a furrow made and packed with a heavy roller, so that the water would run a long distance; 600 to 800 feet. Of course, I do not think there was as much water running out at the end as what went into it. Of course, in that case it ran through the furrow and saturated the soil.

Mr. D. C. Gillette: Has Mr. Stanley had opportunity to observe the new Campbell Automatic Sprinkler put on the market, and can he tell us whether it will reduce the cost of irrigation?

Mr. Stanley: I think you should ask Mr. Campbell about that. He can tell you about that. I have seen it several times.

Mr. Hume: How many of them are supposed to be put on an acre?

Mr. D. C. Gillette: They are, or should be, fifty feet apart. They cover, or have a spread, of twenty-six feet, I think, though I am not familiar with them.

Mr. Peterkin: I was employed until a month ago with the Scott Lake grove,

and I suppose I know as much about the sprinkler as anyone here; I was the one who had him put in one hundred acres under his irrigation system. The standpipes are fifty feet apart, and they throw a spray thirty feet from the standpipe; that is, they will cover sixty feet from edge to edge.

Professor Rolfs: How much pressure?

Mr. Peterkin: Twenty pounds at the nozzle. They have an elevation of forty feet. The contract called for a hundred-horse-power engine to irrigate ten acres at a time. We had a final test and we had it running over twenty acres, having a perfect spread of water and giving a supply equal to a half-inch rainfall on twenty acres. This system, I think, is one that is not as costly as the overhead systems. It is cheaper than any other standpipe system, because it takes only seventeen sprinklers to the acre. I think it is going to revolutionize the overhead system, as it has been developed up to the present time.

Mr. Thompson: I would like to say that I had a little experience with the flowing system of irrigation, and while we never attempted to run the water any great distance, only about 125 feet being as far as we have tried to run it at one time, we had quite good success. I explained our manner of irrigation in last year's report.

If we can make these furrows down which we expect to run the water some time in advance of the time we want to use them, so that they have a chance to dry out, the water will run over them very

rapidly, and if we have a big volume it will reach the lower point in a short time and not soak into the ground as rapidly as when put into a fresh furrow. Water will flow over dry sand quicker and longer than over wet sand.

Mr. Robinson: Down with us we use continuous concrete tile poured into a mould and laid in a trench out of a machine-like worm. As soon as it hardens it is good for running water through. We have inch and a half valves every two and a half feet, and can run water down these middles. It is cheap and quick to lay, and has given us good satisfaction.

Mr. Stanley: The concrete tile is used almost exclusively in the West.

Mr. Marks: I would like to ask Mr. Stanley if he thinks we can cultivate sufficiently to overcome the necessity for irrigation?

Mr. Stanley: I think it can be done to a large extent. I know in some cases they claim they have saved their crops by cultivation, but of course if it becomes too dry, you cannot. I think most of the big growers will agree that money spent for irrigation is well spent.

Mr. Marks: I want to state that six or eight years ago we had about nine months of drought in our section in Polk County, near Winter Haven. I kept the cultivator going all through that drought

every week, and sometimes a little often-er. Some of my neighbors irrigated. The result was, I never lost any leaves nor any fruit. Some of the growers in the neighborhood who did irrigate, lost fruit and flowers. That was why I asked the question.

Mr. Felt: The late Dr. Inman told me he had a large acreage, part under irrigation and part not irrigated, and he told me that about nineteen years out of twenty, he did as well with the cul-tivator as with the irrigator.

Mr. Peterkin: The labor question with the Campbell sprinkler is a good point in its favor. You can start your engine and open your valves and then go about your other work. Labor is practically eliminated.

Mr. _____: What is the cost of maintenance for ten acres?

Mr. Peterkin: That is a question that has not been answered yet. This irri-gation was turned over to the Scott Lake Farm only two weeks ago, and therefore the actual cost of maintaining it has not yet been ascertained. The en-gine is 100 horse-power, and is run on gasoline. It is a system that should be seen. The work has been done at Scott Lake Farm, and anyone who can run out there, I know they will be glad to show it to you. It is seven miles from Bartow, Lakeland or Mulberry.

Beautifying Town and Country

Prof. Frank A. Waugh.

INTRODUCTION

Ladies and Gentlemen: My first and most pleasant duty is to thank you for the kind invitation which has enabled me to be present at this meeting. - It is a great pleasure to come to Florida, and especially to come here at this season of the year; this beautiful season of the year when everything is fine out doors and the country is no longer infested with tourists from the North. It is a most beautiful season, and the one so many people miss.

I wish also to compliment the members of the Society for the grand work it is doing, the opportunities it gives and the enjoyment.

But I must hasten on with my subject. I feel as though it were almost necessary to make apology. I am too old a speaker to apologize for anything, or I might say that an explanation is in order for a man to come from New England to talk to you about anything of this kind. It would seem as though he knew nothing about it. I don't want to throw the blame on New England. I know some of you people have heard the story about Pat Murphy and the natives of Australia. Pat was as fine a man as was ever run out of County Cavanaugh, and took up his residence in New York City. One day he visited the Zoological Gardens and

became interested in the kangaroos. He could not make out the words on the sign attached to the cage, and when the keeper came along he asked him to read what was on the board. The keeper read, "Kangaroo:—a Native of Australia." "Holy Mither," says Pat, "and my sister married wan of those natives of Australia." (Laughter.)

I hope, however, that it does not reflect any on the credit of New England that I should disclaim any nativity there.

I want to speak to you on the subject of gardening in rather a large way. I am going to speak about landscape, which has to do with the planting of shrubs, trees, etc. You must know I am unfamiliar to a large degree with the ornamentals of Florida. But landscape gardening deals also with the principles of design. Those principles are the same in Florida as in Massachusetts, and I feel that if we confine ourselves to that field there will be no misunderstanding, and that you will see how you can apply them to the conditions which exist about you. I shall dwell particularly upon the public aspects of this work as it applies to public gardens and grounds and civic affairs generally.

At the present time, we are developing a branch of landscape gardening which we call civic art, which means the appli-

cation of these principles to public construction or arrangement. Now, this art cation of these principles to public commonly under a certain name which is more or less misleading. It comes before us in the form of campaigns, as "City Beautiful." I object to that phrase. I want to have all of the towns and the country beautiful. The country has just as many elements of beauty as the city, and the beauty in the country needs to be conserved and developed and utilized as much as the beauty of the city.

Again, any campaign for a city beautiful or a country beautiful, is not sufficient in itself. It must seek, also, for a city which is useful, convenient and healthful. In fact, it must be practical as well as aesthetic.

The worst idea that ever got abroad is one which breaks out when a campaign of this kind is begun; namely, that anything that is beautiful, is useless; that if we make something beautiful, it is impractical with reference to things which make for the convenience of the public. That is all wrong, because beauty and utility can be so easily combined; they must go forward hand and hand, and unless they do that they will both fail.

SUMMARY

Prof. F. A. Waugh, of Massachusetts, spoke on landscape gardening, with special reference to its applications in public works. The lecture was illustrated with many lantern slides, without which the text is hardly intelligible. However, Professor Waugh has summarized the general argument of the lecture for this report as follows:

Civic art may be defined as the improvement of all public property in such a way as to secure the greatest beauty, together with the highest utility. In this way it is a practical undertaking, as well as an attempt for beautification. Campaigns for the country beautiful or the city beautiful are wise and should be undertaken where possible; at the same time it should be definitely understood that the city beautiful or the beautiful country is to be also practical, useful, convenient, sanitary and prosperous. Any improvement which is not thoroughly practical should rarely be undertaken merely for the sake of beauty. Indeed, in most cases the genuine beauty of a public work is secured primarily by making it substantial and useful.

The first problem in dealing with any town or rural neighborhood is that of access. There must be a means of getting into the neighborhood of the village. These entrances are relatively few and can be managed in such a way as to appear attractive. They should have the same qualities as the front door of a dwelling house; that is, they should be visible, obvious, clean, dignified, inviting. While everyone recognizes the necessity of these qualities for the front door to his home, it is rather difficult to have them realized in the entrance ways to villages. The main roadways leading into a country neighborhood or to a town should be treated according to this principle. The main entrance to most towns is through the railroad station, and unfortunately the usual railroad depot is an unattractive place instead of a beautiful, attractive, hospitable front entrance.

Everyone realizes that these conditions should be improved.

The next problem in public improvement is that of better roads. Better roads are needed everywhere. Good dirt roads in the country may be just as comfortable and attractive as the best macadam roads, but they will not bear such heavy traffic. In many places roads need to be located with better curves and better grades. Considerable opportunity for improvement is to be found in the treatment of bridges. The customary iron truss work bridge used in the past few years is decidedly ugly. This is being replaced in modern bridge building by the cement arch.

In dealing with the roads it is important also to establish roadside trees. These are attractive on country roads, and indispensable along town streets. They should be of good, hardy native species, and as uniform as possible.

Public buildings of all kinds should be made on more attractive architectural lines. Good, substantial public buildings are a permanent investment of great value to any town. Examples were shown on the screen of beautiful country churches, school houses, postoffices, stores, etc.

Every community needs public

grounds, and the provision of such reserves for country districts has been badly neglected in the past. Play grounds are needed, picnic grounds, public forests and similar establishments, which are quite common in the older civilization of Europe. Considerable progress is being made along these lines in various parts of the United States, but there are important things to be done almost everywhere.

The improvement of private home gardens is also an important branch of civic betterment. While each private garden should be developed primarily for the benefit of its owners, it still has a large public value. The beauty of any town is determined largely by the beauty of its private grounds. A good deal can be done toward furthering this sort of public improvement by proper educational methods, local contests in garden making, etc. In the same way any country neighborhood can be best improved by the improvement of its farms. Each farm should be attractively laid out and kept in good order just as each village lot should contribute its share to the beauty of the town. The natural beauties of the country, known and acknowledged by all, should be still more widely recognized and should be systematically preserved and developed.

Influence of Soil and Fertilizer on Citrus Fruits

Prof. S. E. Collison.

This discussion of the influence of certain factors on the composition of the citrus fruit is based upon the analysis of approximately 600 samples of oranges and grapefruit made the past season by the Chemical Department of the Experiment Station. The principal kind of oranges represented was the seedling, although we received samples of a number of varieties, such as Parson Brown, Pineapples, Valencia, etc.

I wish to state that this work was made possible only by the generosity of the Florida Citrus Exchange. This organization paid the salary of an additional chemist, who gave his whole time in assisting in this work. It also paid the transportation charges on most of the fruit sent us. The Exchange was instrumental in having fruit sent us by growers located in the main citrus districts of the State. These samples of oranges or grapefruit were received at intervals of a week or so throughout the season.

At the same time a number of growers not officially designated by the Exchange sent samples also. In most cases one citrus tree was selected in the grove and the fruit on this tree carefully sampled every week. Twelve fruits were selected from the tree each time as representing the average of the fruit on

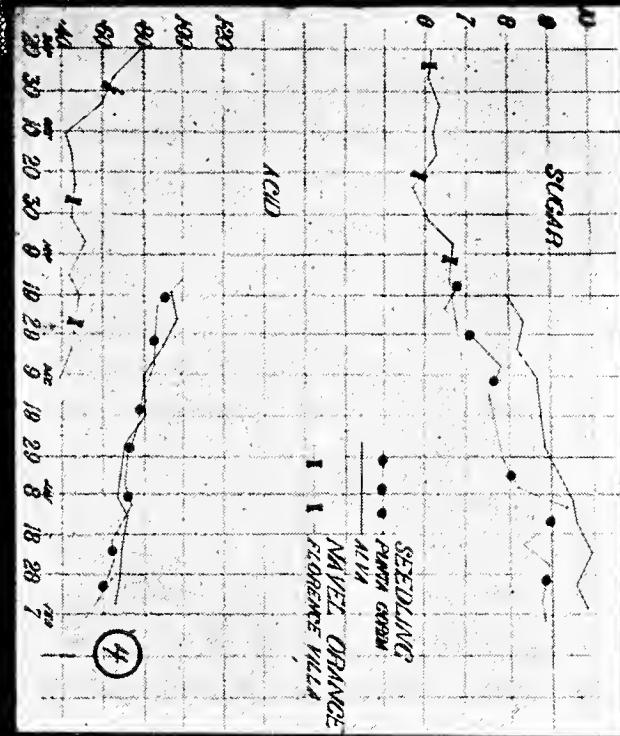
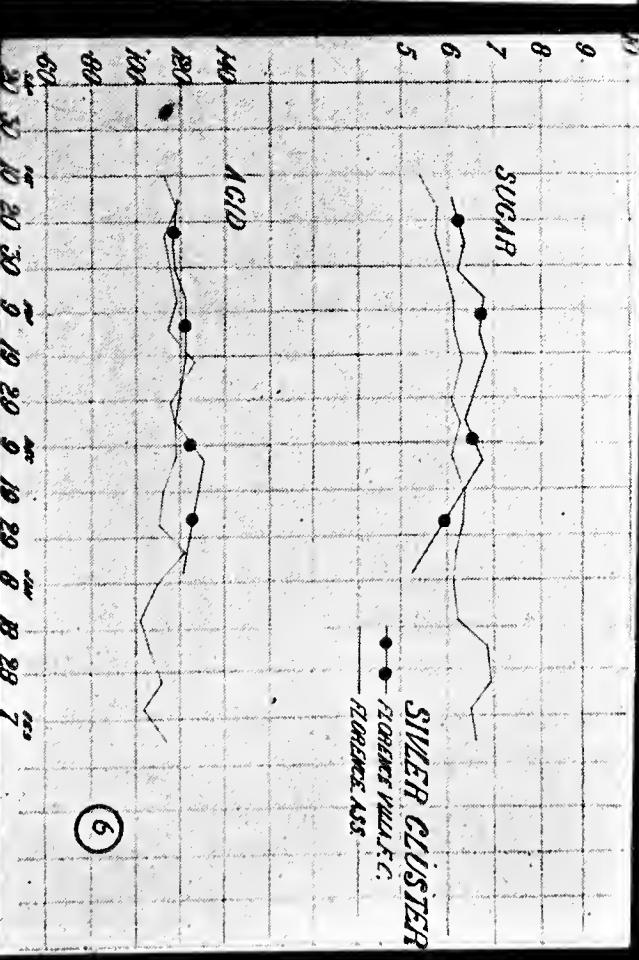
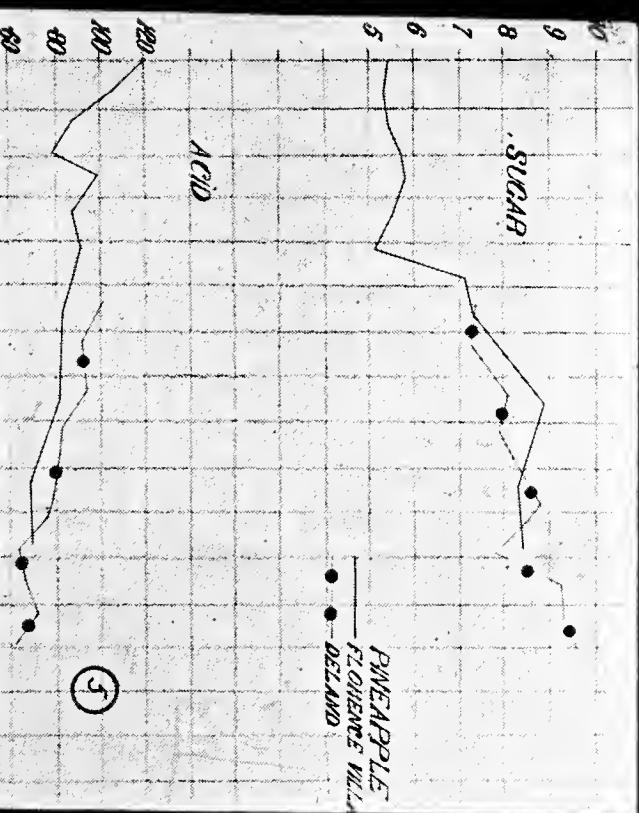
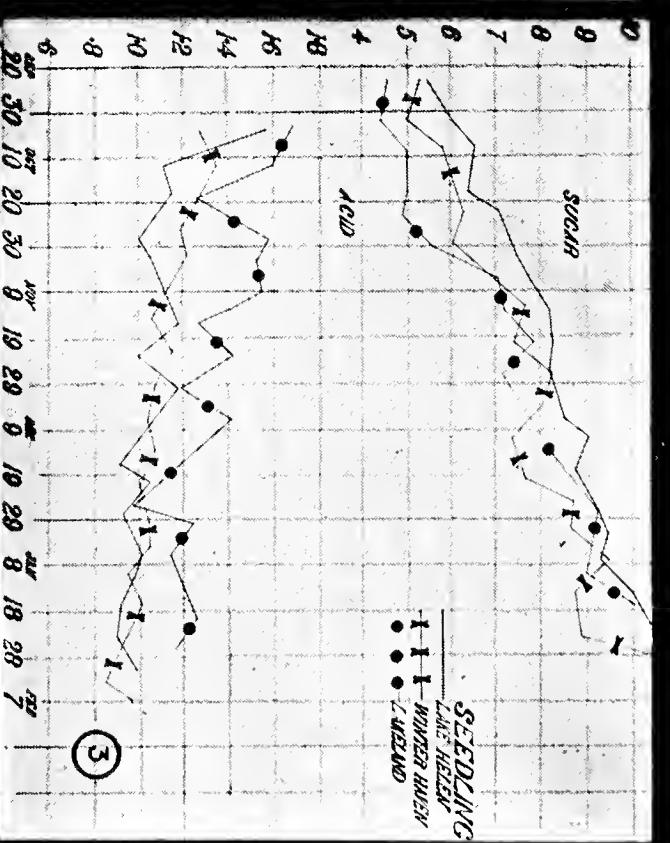
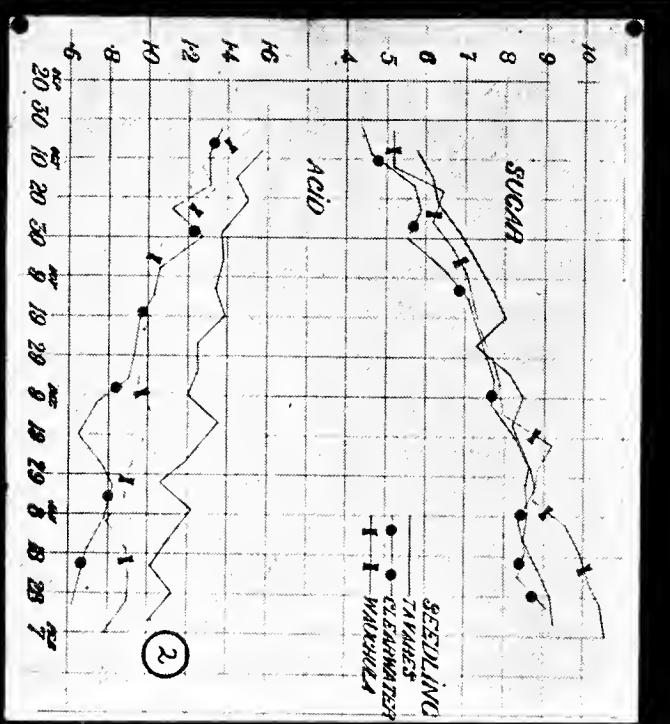
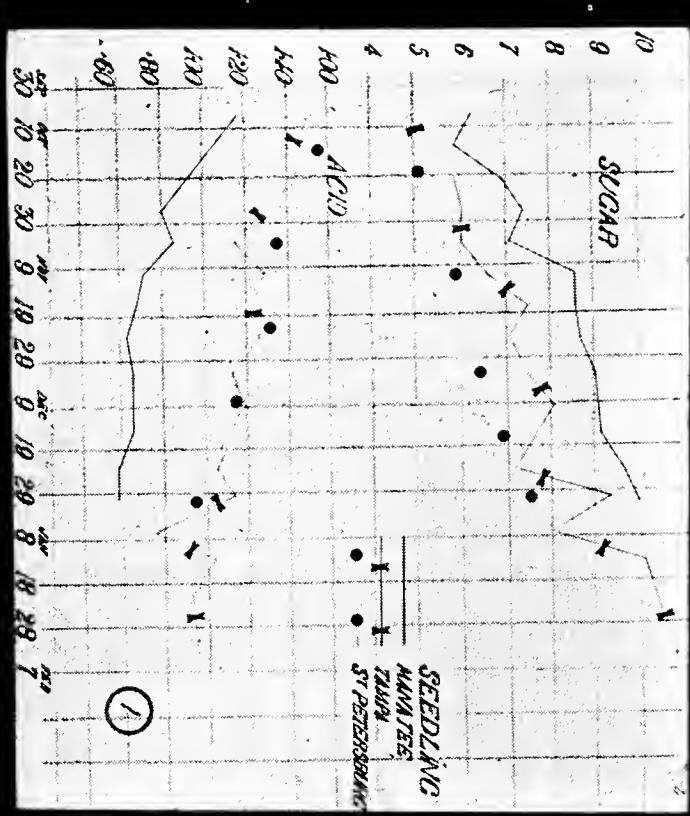
the tree at the time of selection. So that each analysis reported represents a determination made on twelve oranges or grapefruit.

Full details relating to age of tree, type of soil, and methods of cultivation and fertilization were obtained from practically all the growers co-operating with us.

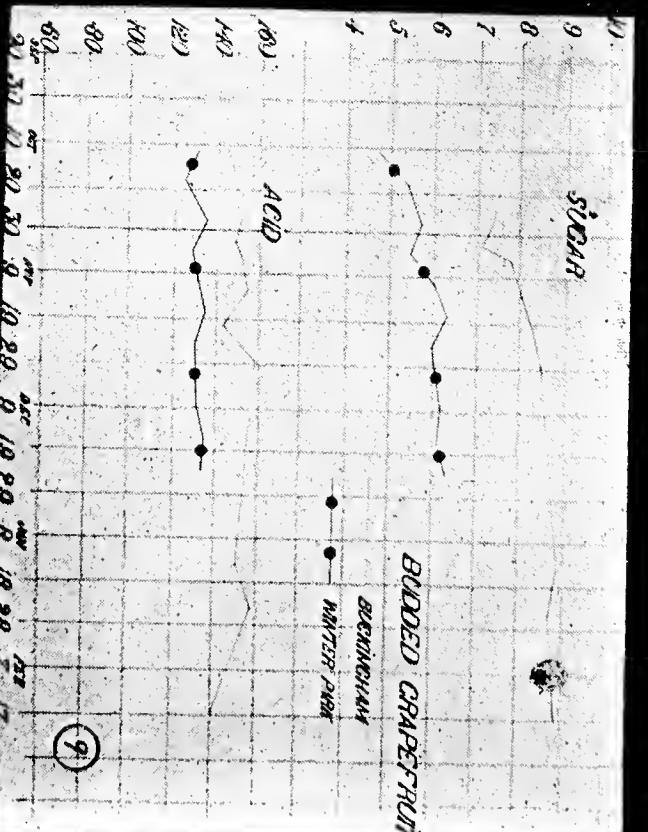
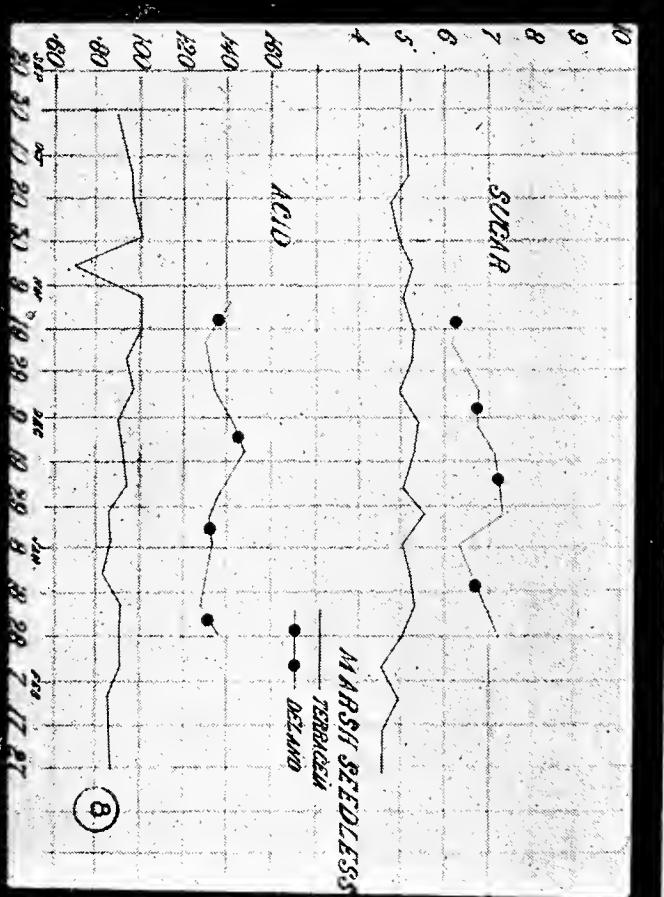
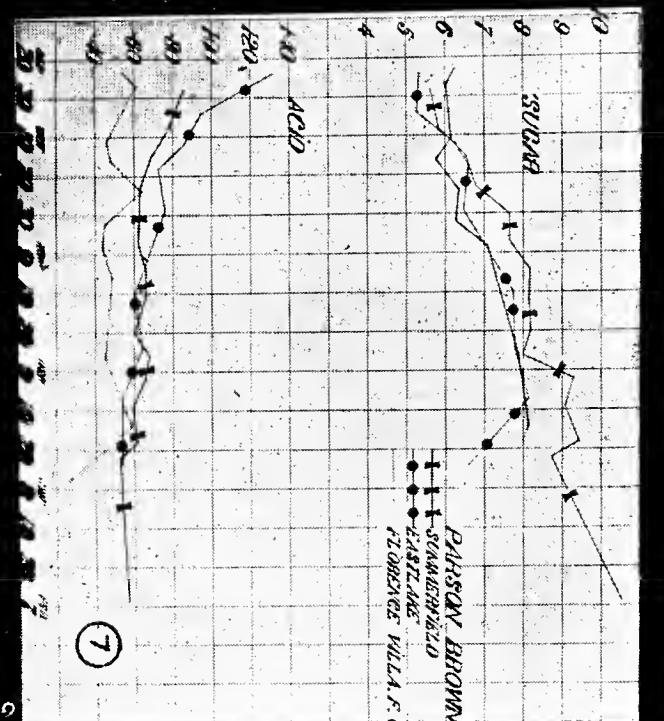
I wish to take this opportunity of expressing our appreciation of the generosity of the Citrus Exchange for making this work possible, and also to thank all those growers who so generously gave their time and careful attention to the selection and forwarding of the samples.

FLAVOR AND FOOD VALUE.

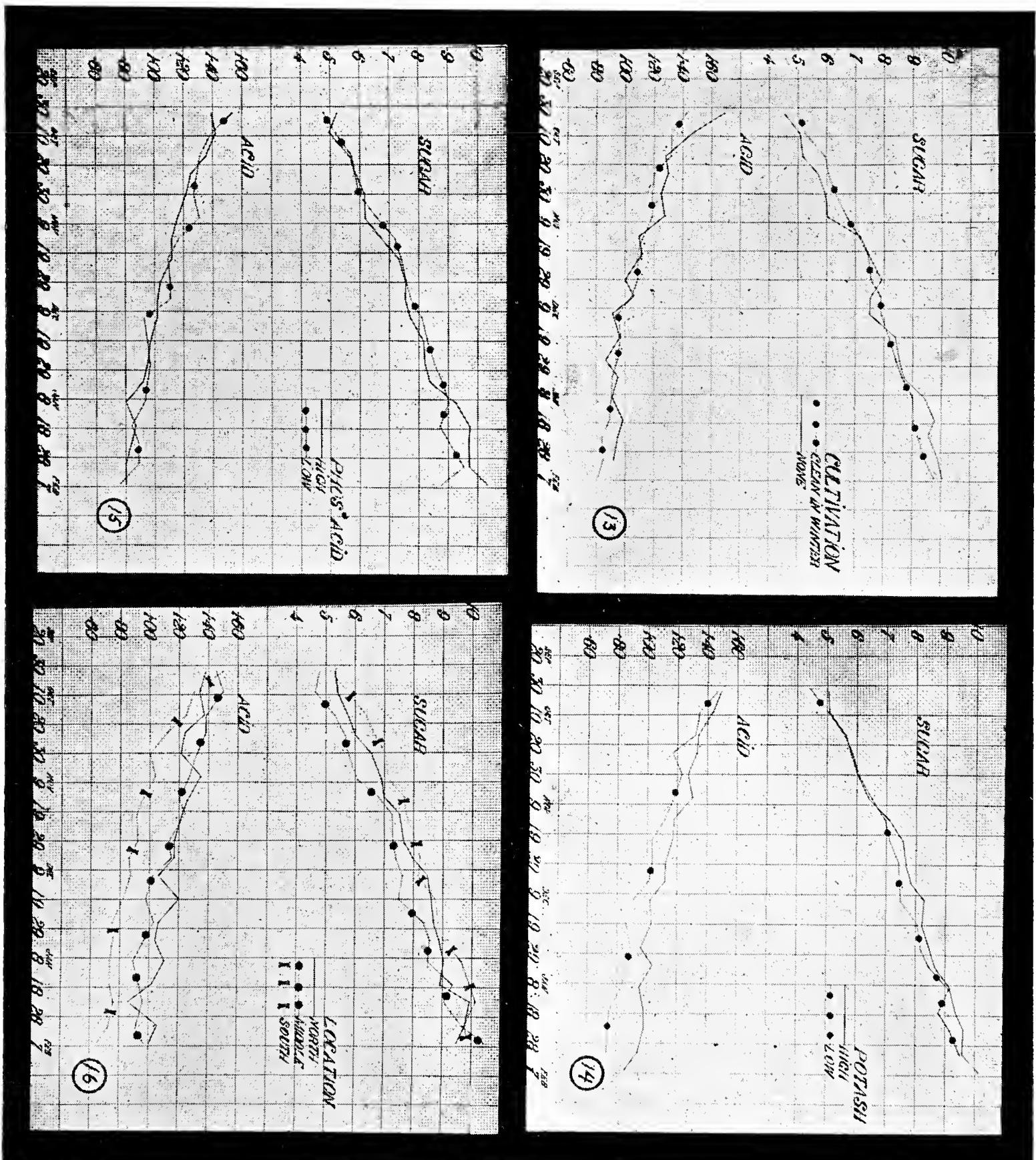
The constituents which give the orange its flavor and for which it is valued as a food product are the acid and the sugars present. Certain essential oils influence the flavor without increasing the food value of the fruit. The acid present is mainly citric, the same acid as occurs in lemons and limes. There are three different sugars present, a little over half of the total sugar consisting of sucrose or cane sugar, the remainder of dextrose or grape sugar, and of levulose or fruit sugar, the two being classed together by the chemist under the name of reducing sugar. Acid and total sugar go together-











er in giving the orange its flavor. A high percentage of sugar should be accompanied by a corresponding high amount of acid, otherwise the orange lacks the sprightly flavor, and tastes insipid or flat. An orange with high acid and low sugar tastes sour and is usually immature.

FACTORS INFLUENCING COMPOSITION.

In our work we have determined the per cent. of sucrose, reducing sugar and acid in the juice and the per cent. of juice. In the discussion at this time, however, we will deal only with the acid and total sugar.

We have very little published data regarding the influence of certain factors, such as temperature, methods of cultivation, locality, etc., on the composition of citrus fruits. Still less is known regarding the effects of the different fertilizing constituents which we use so liberally on our groves. We know that their use is necessary on our soils in order to produce adequate growth and paying crops, but we are entirely in the dark as to their influence on the formation, for example, of acid and of sugar in the fruit.

The past season's work has given us the opportunity to collect data bearing on these points, and supported as it is by the large number of analyses made, should be of value in throwing some light on the influence of the above mentioned factors on the development of acid and of sugar.

At the same time, owing to the large number of analyses made, wide variations in locality, and in methods of culti-

vation and fertilization, we have been able to obtain reliable data showing the influence of these different factors on the acid and sugar content of the orange.

As regards locality we have received samples of seedling oranges from as far north as Lake Helen and Tavares, and as far south as Punta Gorda, so that we shall be able to show the difference in composition of oranges grown in what we may designate as the northern section of the citrus district, the middle, and the southern. In the same way we are able to divide the seedling samples into two series, those taken from groves receiving little or practically no cultivation during the year, and those where clean culture is practiced for about eight months, with a cover crop the remainder of the year, and to demonstrate what effect these two widely different methods have on the composition of the fruit.

The groves from which our samples were received were also fertilized in different ways, so that we can make a further classification into those receiving a fertilizer high in phosphoric acid, and others receiving a low percentage; also two series receiving, respectively, high and low percentages of potash.

Finally we have made a study of the factor of temperature as influencing the composition of the fruit.

I may state that we have found conditions which are contrary to the usual belief as to the influence of these factors on the orange.

CONCLUSIONS.

1. In the orange there is a gradual increase of sugar as the fruit matures.

There is an increase both of sucrose and reducing sugar, in about the same proportions, the former, however, remaining somewhat greater in amount through the season than the latter.

2. The orange exhibits a gradual decrease of acid. Apparently all the acid is formed in the orange early in the season, and as the fruit matures it is gradually changed into some other material. This is directly opposite to what we have observed in regard to the sugar of the orange.

3. In grapefruit we do not get so great an increase of sugar or decrease of acid as is the case with the orange. The process of ripening in the grapefruit apparently consists, in part, at least, in a decrease of bitterness and an increase in the juice content.

4. Effect of certain factors on production of acid and of sugar in the orange:

A. Soil. The data at hand is not sufficient to justify a definite conclusion on this point.

B. Locality.

1. Fruit in the southern districts show less acid and slightly more sugar than in the middle and northern sections.

These factors would lead to the production of fruit not quite so high in quality as that produced in more northern sections. See charts 1, 2, 3, 4, 5, 7, 16.

2. Fruit in the northern section shows slightly more acid than in the other two sections, and at the same time slightly more sugar than that produced in the middle section.

Chart 16 shows this matter graphically by regions, and may be regarded as a composite of all the work done.

C. Cultivation.

Different methods of cultivation show no influence on the production of acid and of sugar in the orange.

Chart 13 shows the curves for the cultivated and uncultivated groves crossing one another. This chart was made up of all the information at hand, and is what we might expect in a general way.

THE CHARTS.

By the aid of charts which will be thrown upon the screen we shall be able to show you at a glance just how the acid and sugar of the citrus fruit vary from week to week, and what actually takes place in the fruit as regards these two constituents as it matures.

EXPLANATION OF CHARTS.

Charts 1, 2, 3 and 4 represent analyses of seedlings grown in various parts of the State. As these are from unknown parentage, the seedlings of any one locality may not be exactly comparable with those of other localities. However, with minor variations, these curves show a remarkable consistency as regards the ripening of the fruit.

Chart 4, Navel Orange.—The data shown here should not be taken as characteristic of the variety, since the fruit was rather insipid and of poor quality.

Chart 5 shows Pineapple oranges, and is fairly representative of the variety.

Chart 7 shows Parson Brown oranges from three different localities. The sam-

ples from Summerfield are remarkable, in that the good quality of the fruit was maintained until very late in the season. The other two samples showed a breaking down in the sugar content by the middle of November, which is naturally expected.

Chart 6 of Silver Cluster grapefruit is peculiar in that it indicates a breaking down of the sugar rather early in the season in the fruit from Florence Villa Fruit Company, while the other series grown in the same vicinity maintained its good quality into February.

Chart 8 is of interest in showing the series taken at Terra Ceia, where the fruit was low in sugar and low in acid throughout the season, while the eating qualities were likewise inferior. There is quite a remarkable variation shown here between the two series of the same variety.

Chart 9, of budded grapefruit, but of no particular variety, shows no great deviation from the normal, the curves running about the normal way for grapefruit.

Chart 10 shows a series of Valencias, taken at Winter Garden. The series shows very low sugar and high acid content at the beginning of the season, maturing, however, with a fairly high percentage of acid and very high percentage of sugar about the middle of January.

Chart 11 shows a Triumph grapefruit with a rather high sugar content and a very low acid content, making the fruit palatable early in the season.

The common Florida represented on the same chart is remarkable in showing

a rapid rise in the acid content until the latter part of November, and then continuing somewhat irregularly until after the middle of February. The sugar content of this series began at a high figure the latter part of October and gradually increased until the close of the sampling season, when a very high sugar content was reached. Toward the end of the season this grapefruit was of very high quality, and was in fact the best of all of those analyzed. The series shows distinctly what may be expected chemically from an analysis of a high quality of grapefruit.

Chart 12 is of interest in showing the relation of sucrose or cane sugar to the invert or reducing sugars of the orange when we take the average of all the seedling samples sent in.

Chart 13 shows graphically the analyses of fruit taken from a number of groves of seedlings under clean culture and under non-cultural conditions. The results shown here are rather contrary to what is a very frequently expressed opinion. They show that on the average we can not expect to influence the quality of fruit materially by cultivation or non-cultivation.

Chart 14, potash, shows composite curves made up of analyses of all the series of seedling oranges received by grouping those receiving a fertilizer high in potash in one series and those of low potash fertilization in another series. The data shown graphically here does not bear out the very general opinion that a fertilizer high in potash gives a sweeter orange than one low in potash. The su-

gar content of these series run uniformly alike.

In the case of acid content the curves show that a high potash fertilizer led to a slight but uniformly higher percentage of acid in the fruit.

Chart 15, phosphoric acid, shows curves obtained in the same way as those shown on the potash chart. The curves on this chart show very little deviation, frequently crossing one another, showing that phosphoric acid has probably no material influence on the variation in the sugar and acid content of the fruit.

Chart 16, location. The section designated here as *North* includes Lake, Volusia, and Orange counties; *Middle*, Pinellas, Hillsboro, and Polk; *South*, Manatee, DeSoto, and Lee. The curves shown here are made up of composites of the seedling oranges received from the three sections. They show in a general way that the fruit in the *South* region matures earlier than that in the *Middle* or *North* sections. The curve for the *North* section crosses both the others. In a general way it is shown that Manatee, DeSoto, and Lee counties should market their fruit earlier than sections farther north.

It should be remembered, however, that the question of earliness or lateness of seedling fruit depends more on parentage than on region.

A bulletin giving in detail the analysis of each individual sample will be published by the Experiment Station.

DISCUSSION.

Mr. Hume: I am sure we are all very much interested in the discussion. I am sure Professor Collison's lecture has thrown some light on some of the questions which have been bothering us. Are there any questions you would like to ask Professor Collison?

Mr. Stewart: The question has been asked as to what effect a high amount of phosphoric acid would have on the rind of the orange.

Mr. Hume: I understand that is a question which Professor Collison has not gone into.

Mr. Collison: I have made no observation about that.

Mr. Hume: I guess the question will have to go unanswered.

Mr. Rolfs: I want to say that we are now in a position, after having made 600 analyses, to speak with some degree of assurance about some of the results, as you see. It was not guess work: the result of some fifteen or twenty analyses, but there are 600 analyses back of what we have presented, not only from one locality, but from as far south as Fort Myers, up through the State. You must remember these slides are not based on one analysis, but rather a composite of a large number of analyses, and that is where the value of it lies.

I also want to say that we have just touched the field; just begun it. We have still a great mass of information tied up in the constituents of the samples. There are about 600 samples waiting for further work. There are a great many questions that could be answered as

strongly as these if we could have those analyses made, and we are hoping to get those analyses just as quickly as conditions will permit.

We must consider ourselves fortunate to have these figures. Do you know that nowhere else in the world could we get those figures? There are some other computations we could make, but for the want of time we could not get them out. We hope to get them out so that you may have them next year.

You have had a general view of the question, but the figures and those charts will need days of study. Then, after that, go back and study them again, and after you study them six months, there is still material for study. It is a big study.

This is not a superficial work, but a difficult work which has required weeks and months. We are starting out to prove that phosphoric acid will make a sweet orange, but we are allowing the figures to lead us where they please. We may have some opinion in regard to it, but after we see the figures we may change our opinions entirely.

You have seen here in just a few minutes, the work of Professor Collison for over six months, and I fear that once in a while he was not as good a Presbyterian as he might be, and worked on Sunday.

Mr. Hume: Time and time again he was in the laboratory twelve hours a day.

Mr. Cox: Is it of importance to know what effect a high degree of ammonia has on the tree?

Mr. Collison: I consider that of as much importance as phosphoric acid, or potash, but unfortunately from the sam-

ples I was not able to receive enough having high ammonia and low ammonia to give us satisfactory results. With the samples of seedling oranges upon which we based our calculations, the grove had been fertilized with three or four different sources of ammonia, and nearly every sample received one or two of these sources at least, so that we could not select one sample as being fertilized with sulphate of ammonia or nitrate of soda, or we could not select those having high or low ammonia, because they received practically the same proportion. With phosphoric acid and potash it was different.

Professor Rolfs: I want to give away one of Professor Collison's secrets. He now hopes to get the co-operation of the citrus growers to the extent of getting the samples of soils on which these citrus fruits are grown, to see whether or not the soils have anything in them.

Mr. Hume: Keep him the rest of his life on it. Get to the bottom of it.

Professor Rolfs: He might be doing work less profitable.

Mr. _____: Would it be in order to move a vote of thanks to our speaker of the evening? I move that this Society give an unanimous vote of thanks to Professor Waugh for his most interesting and instructive address of this evening.

Mr. Skinner: While we certainly enjoyed Professor Waugh's lecture, I think the vote of thanks should include also Professor Collison's address, which I think is remarkable. I amend the motion to include Professor Collison, and second it.

(Motion carried.)

Pineapple Picking, A Vacation

Mrs. P. H. Rolfs.

Our President has said that the most certain way to keep a member of this society from attending a session is to place his name on the program. Now, if he expected that to prevent my attendance at a meeting of the Florida State Horticultural Society, he was mistaken. I may not tell you how to grow a crop of pineapples, but I can tell you how a woman can spend a pleasant and profitable vacation by caring for the crop after it has been grown and is ready to be shipped.

In the index to Reports of Volume V to XXI, inclusive, of this society, published in Report for 1909, we find 120 references to pineapples. References will be found on almost every conceivable topic connected with the industry. In 1911 the writer gave over twenty-five methods of preparing the fruit for table use. In Bulletin 140, Bureau of Plant Industry, of the United States Department of Agriculture, we find a good resume of the history of the pineapple.

We have been told that spruce pine land is most largely used for pineapple growing; that this land should be well cleared, and the soil put into good condition before the slips are planted. We have also been told how to plant slips, how to fertilize and cultivate, and when the crop is grown, when and how to break the fruit, transfer it to the pack-

ing house, size, wrap, pack and ship it. Since so much has been written and put into published form, it seems unnecessary to repeat or review these papers. Hence, I venture to introduce a new topic by recommending pineapple packing as a unique method of spending a vacation.

The shipping season extends from May to July, and comes at a time of the year when most of us, after the strenuous life of winter, are eager to have our family physician prescribe a change of climate or occupation. Most of you know the delights and disappointments of vacation, as the average person know them. Few, I venture to assert, know the pleasure of a vacation spent in a pineapple packing shed.

HOW I BEGAN THE WORK.

In the spring of 1903 my husband went to Mexico, expecting to return to Florida before the pines were ready to ship. The warm spring, however, hastened the maturity of the crop. The coloring at the base of the fruit and parting of segments indicated that it should go forward. I asked the advice of an extensive grower, who advised me to ship. I ordered wraps and crates and began shipping with such success that I have continued each summer to pack and ship our fruit, and what I have done oth-

er women can do. The fruit until 1912 was handled for me by the Indian River and Lake Worth Pineapple Growers' Association, E. P. Porcher as Manager. The 1912 crop was handled by Chase & Company.

I have handled the crop only after it has been grown, but there is no good reason why a woman can not be a grower as well as a shipper. She can not do the manual labor required to grow the fruit, but she can superintend the growing just as easily as any other crop. She can consult the literature published, study conditions peculiar to her section, and learn what fertilizer the soil in her particular location requires to feed the pineapple plant. To produce a good sound fruit, proper care and fertilization are necessary. In my experience I have lost only one shipment from decay, and that was a small one. I have received good prices, and prices that did not pay for taking the fruit to the railway station. On the average for the entire time it has paid well. It is lots of fun to check up and compare notes with your neighbors, especially when you find that your sizes run just a little larger than the other fellow's. Then too, the curiosity to see just what the next shipment will bring keeps one's expectations keyed up. During the year 1909 and 1910 the crop scarcely paid expenses, but we kept on planting and shipping. The prices for the 1912 crop were somewhat lower than the average for the eight good years.

HOW TO ESTIMATE THE CROP.

When the fruit is half grown one can estimate the expected crop with a fair

degree of accuracy, and determine about how many wraps and crates will be needed. A simple way is to count the fruits on every sixth bed. Multiply the number of fruits found on each bed by six, add the several sums obtained, and divide the product by thirty. The counting of fruits on each sixth bed will cover the various conditions that may occur in different sections of the field. The number of fruits packed in crate ranges from 18 to 48, so we can safely use thirty as an average. In ordering wraps I estimate 1,000 wraps to each thirty crates. Having found how many wraps and crates will probably be required, it is an easy matter to order them and the nails for making and nailing up the crates. It is also necessary to see that shipping stencil, number stencil, and ink pad are at hand, and that baskets, bins, and mittens are ready for use. This is quite as simple as ordering the material for one dress.

I dislike to be personal, yet I cannot better illustrate what I wish to make clear to you than to give an outline of the vacation of myself and two daughters, aged 16 and 14, during the summer of 1912. We shipped 700 crates of pineapples, doing all the work of making crates, wrapping, packing, nailing up and stenciling the crates, in fact, everything from the time the fruit came from the field until it was ready to be loaded on the wagon and taken to the car. We are eager to take up the shipping of the crop of 1913. The lifting of the crates and other heavy work is done by the laborers.

It is a simple matter to instruct the laborers to break the fruit at its proper stage of ripeness. Fruit that gets too

ripe can nearly always be disposed of to good advantage in nearby markets.

COMPARISON OF VACATIONS.

For such a vacation as I have been recommending, very little preparation is required. A short-sleeved house dress is most comfortable to wear when packing pineapples. The question is often asked, "Do you wear gloves?" No, they are entirely unnecessary; in fact, a hindrance. The pine should be grasped in such a manner that the spines point away from rather than toward the hand. A scratch now and then may be expected, just as when you are cutting a bouquet of roses. If you really want the roses, you do not leave them on the bushes because of the thorns.

It is nearly always cool in the packing shed. We often have to weight down the wraps to keep them in place. The day's work can not begin very early unless the bins have been filled with fruit the previous day, as it is not advisable to pack fruit wet with dew or rain. Sometimes this cannot be avoided.

From what I have said you may think it is all pleasure and no vexation. Let me tell you there is no fun in a game where you always win. There is no accomplishment worth the while that does not present its perplexities. It is rather trying to one's patience, especially a woman's, to get the fruit to the car in good condition and have your neighbor, a man, put a load of dripping wet stuff on top of them. Another trial to the small shipper is the delay in freight being sent out from small stations. These minor

vexations are overcome when one has car lots.

The shipping season, as I have said, continues from three to six weeks, owing to climatic conditions when the fruit is maturing, but the packer is free to be away from the packing shed a portion of the time, so the work does not become monotonous or tiresome. I am always sorry when the last load leaves the shed, and that feature of my summer vacation is closed for the season.

The crowning point to the credit of this kind of a vacation is the assurance of at least a small bank account, and you are not obliged to draw on next year's salary for the necessary cash to pay your board for the summer's outing.

But let us, for comparison, turn to the way the average woman prepares for and spends her summer vacation, be it at the seashore, mountain or to visit friends. She studies railroad timetables, hotel and boarding house rates, fashion magazines, spends hours deciding what she is likely to need in order to be properly dressed for whatever place may have been selected.

Finally she boards a crowded train, for many others are journeying to their vacation place. She endures the discomforts of the journey as best she can, and finds herself at last where she is to have the right of possessing one or two rooms during her delightful vacation. Delightful! Yes, especially if your next door neighbor snores all night, and the crowd from the next train arrives at 1 a. m., and other guests are leaving and are awakened at 4 a. m.

What is a more strenuous life than

spending a vacation visiting friends, especially if there be several friends in one vicinity. You are rushed from place to place, not having the opportunity to rest or to be really at home in any one spot. Everything and everybody for miles around must be visited, and you are really glad when your vacation is over.

I ask, are such vacations as satisfactory as the first one reported?

Plenty of room, plenty of fruit fresh from the plant, plenty of leisure for reading and sleeping, no worry about the house always in order, no worry about

your dress being up to the fashion. Time for a trip to take a dip into the surf, or a launch ride. Just a free pioneer life, taking it easy, yet sufficient exercise to make commonplace, everyday food taste good.

Then last, but not least, how about the satisfaction of a bank account with a nice margin.

If, in this paper, I have brought to your attention the fact that a vacation spent packing pineapples is more an ideal one than a vacation at seashore or mountain, I will forgive our President for putting me on the program.

PINEAPPLES.

W. R. Hardee.

Mr. President, Ladies and Gentlemen of the Florida State Horticultural Society:

Having been assigned the subject of Pineapples it may not be out of order to say that this subject has been for a number of years written about by various members of this Society, covering its origin, the different sections where grown, the methods of growing, harvesting, shipping and selling. All of these points have been exhaustively and intelligently dwelt upon, and from the perusal of these articles, covering the whole subject, it seems next to impossible to add any new information that would be of interest; yet, as the State of Florida is growing rapidly in population, it is certain that many new members are among us, and for that reason we may be excused if we repeat some of the

things that are familiar to the older members.

There seems to be some question as to where the first pineapples were planted and grown on the mainland of Florida, but from the best information obtainable, it must have been about the year 1881, for about that time a variety known as the Egyptian Queen were being cultivated at Cape Canaveral, on the east side of Indian River, opposite Titusville, in Brevard county. These plantings, however, were never very extensive; and, as far as we are aware, but few if any, were ever shipped for market out of the State. The next development was closely following this date at Eden (about 100 miles south of Titusville) where the business assumed its first real commercial proportions. As late as 1889 the development had proba-

bly not exceeded a few hundred acres, but from that date up to 1904 a strip of land lying immediately along the west shore of Indian River and the north and south shores of the St. Lucie River, and the Lake Worth section, that is to say, from Fort Pierce south to and including Lake Worth, was rapidly developed; and from 1904 to 1909, after the Florida East Coast Railway had extended to Miami and beyond, that territory also grew and still grows this luscious fruit.

The greatest acreage and the largest yield in the history of the business in the sections mentioned was in 1909, when the output was 1,110,547 standard crates from 6,000 acres, of which perhaps 4,000 acres had reached the bearing age.

Prior to this season of 1909, the business had been quite profitable, but as we had acquired the Hawaiian Islands by "benevolent assimilation," and they having gone into the pineapple business quite extensively and were canning practically their entire output, that fact reduced the demand and requirements of the American canners in our American cities to such an extent that they were compelled to refuse the fruit of the importations from Cuba, and the result was that it was thrown on our markets in direct competition with our American Florida-grown product, which resulted in a loss to both Florida and Cuban growers.

Porto Rico, also one of our "benevolently assimilated" possessions, has in the past few years engaged in pineapple culture, and is increasing her output each season, having sent into the American cities for the year 1912, 353,287 crates.

In the early years of pineapple growing in Florida, a section around Orlando planted a limited acreage in a fancy variety, namely Smooth Cayenne, so called for the reason that there were no saw-like barbs along the edges of the leaves and top of plants, as with other varieties. The Smooth Cayenne is a delicious fruit, growing to a weight of ten pounds and larger, but the demand for fruit of this size was so limited that they were never planted to any extent outside of the Orlando territory, where we understand they are practically abandoned as a commercial enterprise at this time.

Many varieties have been tried, but all have given way to the Red Spanish, which combines qualities of hardiness, flavor, carrying qualities and productiveness that place it at the head of all other varieties for Florida growers. The original plants with which the business was started in Florida came from the Bahama Islands. Porto Rico also confines its production to the Red Spanish almost exclusively, while the Hawaiian Islands grow the Smooth Cayenne for their main crop, which is still used for canning purposes where they are grown, and shipped into this country as a manufactured article.

It might be well to mention the fact that the Smooth Cayenne does not bear transportation well, and also that fields have to be reset more frequently than the other varieties, and as the plants are expensive, the general results did not justify their continuation as a commercial proposition.

We give below a comparison for eight

years of the production in Cuba and Florida, which may be of interest:

Year	Cuba.	Florida.
1905	826,985	370,688
1906	949,412	574,688
1907	661,634	577,806
1908	950,966	640,829
1909	1,263,466	1,110,547
1910	1,118,524	450,000
1911	1,881,979	552,000
1912	1,222,000	668,000

As will be seen by this comparison, commencing with 1909, Cuba has shipped into our American markets annually over a million crates of pineapples, while the production in Florida has for the last four years following 1909 been only about half of her 1909 crop.

This condition resulted from various causes; first, from the fact that Cuba could grow and lay down in the average markets of the United States, over the same lines of transportation that the Florida pineapples moved, at an average cost of \$1.45 per crate, while the cost to the Florida grower was \$1.80 per crate. This handicap was serious; but, coupled with this condition, we encountered at this time a blight which for a time seemed destined to exterminate the industry in certain sections, and especially the older plantations, where resetting old fields had become necessary. Just what the cause was, has never been definitely settled. Different opinions have been advanced, both by the layman and the scientific investigator, but the concensus of opinion seems to be that weather conditions played an important part in the havoc that resulted; these

conditions being a series of excessively dry years, which reduced the soils to a condition where they were incapable of taking up the usual heavy applications of fertilizers that were necessary to produce a remunerative crop of pineapples. This phase of the business was new to practically every grower, and in his dilemma over the declining condition of his fields, he added more fuel to the flames by applying more fertilizer to a soil already loaded up with an excess that was only lying there creating poisonous gases to destroy the tender roots as they would attempt to penetrate the soil from the parent plant. The soil was simply suffering from a case of acute indigestion, and no one seemed competent to properly diagnose the trouble.

But a change in weather conditions has thrown a great light on the situation, and fields that were not too far gone have in some cases practically regained a healthy condition. That the theory of indigestion was correct is further borne out by the fact that in many instances when the trouble was first decided to be serious, and that a curtailment of acreage was necessary, only the best parts of fields were continued with the regular heavy application of fertilizers, while some of the less vigorous parts were fertilized but lightly, and some not at all. It was soon discovered that the fields which were continued under heavy fertilization continued to wilt, while those receiving the lesser amount, and even those receiving *none at all*, in many instances recovered. This did not prove to be true in every instance, but was sufficiently so in the majority to convince

those who were in close touch and were interested enough to follow the matter to a final conclusion.

It is also true that the fertilizers that we applied were not always what we supposed we were getting, and this caused some serious damage, for we found by thorough investigation that "Blood and Bone" could be produced from the "swill tub," "kitchen garbage," etc., by the addition of copperas, sulphuric acid and a few other chemicals and concoctions! Of course this form of "Blood and Bone" did not improve soil conditions, but aggravated the already deplorable state of affairs by adding more poisonous substances. As a result, the growers abused the fertilizer manufacturers, and the fertilizer manufacturers in turn laid the growers out (figuratively speaking); and, taking it altogether, we had quite an upheaval. But it put everyone to thinking, and a general good resulted; for it revealed the fact that no one had given either the soil or the fertilizer the thought or investigation that was necessary.

Yet, while great benefit has come from the little commotion that was stirred up, the fact remains that we have much to learn regarding the relation of soil to fertilizer under varying weather conditions, and it behooves every grower, whether he grows pineapples or some other fruit or vegetable, to bear in mind our experience; for you can give your soil or your plants a case of indigestion as easily as you can founder your horse by improper feed or over-feeding. This is a layman's way of stating a truism. Disregard it if you like, and you will most

likely pay the penalty as the pineapple growers did.

During the past three years much has been said and written along this line, but the principal trouble seems to be that the average tiller of the soil is slow to combine scientific and practical farming, and it looks as though the time is quite distant when a majority will avail themselves of information so essential to the success of their business.

Now, we will turn to that phase of the situation which is of the most importance—*the future*. Those of us who are at this time engaged in the pineapple business, and prospective growers, necessarily feel a greater interest in matters pertaining to the future than in a review of the past failures and successes; and, in this connection, we wish to say that it is our firm conviction that the future of the pineapple industry is on as firm a basis for successful continuation as at any time in its history, and this condition has been brought about more as a result of the disasters that we have related than from the successes that preceded them.

We do not mean by this declaration of faith in the future success of the business that all who engage in it will succeed; for it is undoubtedly true that a majority who were in business at the time of depression abandoned it. This was particularly true of the small grower who rushed into the business when things were at the high tide of success but who, when the time came for the exercise of conservative, sound business judgment, were compelled to abdicate.

Conditions and results of the past will

prevent the irresponsible element from again entering the field; for the fertilizer manufacturer, the crate manufacturer, and others who were so kind as to advance their wares to all classes alike are more cautious now; for they can show you with feelings of emotion many entries on their ledgers in red ink—a standing monument to the folly of believing, or at least having acted as if they did believe, that every man, black, yellow, white or what not, was a pre-ordained and predestined success in the profitable growing and marketing of pineapples. Approach the possessors of ledgers with those red ink decorations now and they want your pedigree and a bank endorsement—a condition which is the correct basis for sound business operations and the proper protection for the legitimate grower.

This of itself is one of the most potent factors in placing the business on a sound commercial basis; for, like all other things, in the end it is the survival of the fittest; and, as the requirements of advanced business demand brains, skill, and co-operation, there always have been and always will be men and women to measure up to those requirements and to carry on to success any and all enterprises in this country.

Pineapple growing, having gone through the vicissitudes which sooner or later come to all business ventures, has practically eliminated the impractical and irresponsible element, and is assuming a strictly up-to-date plan and method of procedure.

In the old days, every man who operated a "patch" had his individual stamp

or stencil with which he shipped to his individual commission merchant; he had his individual ideas about picking, packing and shipping his pineapples into the markets. The country was full of these pineapple "kings," all acting separately, and in open competition with each other. Today these "kings" are out of the game, and the capers that they cut and the trouble they brought on themselves and others who were powerless to persuade them from their suicidal course crystallized the movement for consolidation and co-operation, which is another important factor that places the business on a surer footing. We do not mean that the best possible method is now in operation, but that it is far in advance of what it was in years past.

We have, of course, to consider the competition from Cuba and Porto Rico; and, while it is formidable, it is not sufficient to cause us to lose faith or interest, for the soils of both Cuba and Porto Rico where their pineapples are grown are admirably suited to the profitable growing of the more staple crops, such as tobacco, sugar cane and other articles of common use, so that when profits on pineapples get too low, they can, with little expense, change to something else which, while it may not pay as large a profit as pineapples did at one time, the difference would be overcome by the certainty of the markets for a product that is steadily in demand as a necessity.

On the other hand, the Florida soil on which pineapples are grown is unsuited for almost any other crop; yet, with our past experience, we are firmly of the opinion that by the economical plan of

soil conservation and a more intelligent use of fertilizers under varying weather conditions, which we have dearly learned in the past, the pineapple industry is one of the safest money crops in Florida at this time; provided our Democratic friends in Congress do not open up our markets to the importation of foreign grown fruit.

DISCUSSION.

Mr. Goodwin: I would like to ask Mr. Painter what experience he has had with pineapple wilt, its cause, prevention and cure. I would like to have that on record.

Mr. Painter: Pineapple wilt is one of the mysteries of the pineapple business. No one has been able to ascertain the cause of it, but we believe it is some form of fungous growth that attacks the root and has done its work before the grower knows it. He will observe a plant going backward, and when he examines the roots he will find they are almost totally decayed. Different experiments have been made in an endeavor to eradicate this trouble, but the only sure method we have found is to pull up the plants and re-set. Different remedies have been tried, such as bluestone, sulphate of iron and different insecticides and fungicides, but they all seem to give about the same results. They do little or no good. We have to go back to the first principle of digging up the old plant and replanting.

Mr. Goodwin: In the same spot?

Mr. Painter: Yes, in the same place. In our pineapple field at Boynton we are

at present carrying out a series of experiments that I hope are going to prove of great value in solving this problem. On some of our beds we are making a monthly application of fertilizer, instead of three or four times a year. We find that where the same amount is applied, but divided in smaller applications, we get results that are almost amazing. The greater growth and the better development of the plant shows up tremendously with the smaller and more frequent applications.

We are also trying experiments covering so many pounds to the acre and increasing it, or doubling it up each time.

We are also experimenting with some of the chemicals as fertilizers that have been condemned by the pineapple growers. I wish to state in this connection that while the fertilizer people have been condemned because more sulphate of ammonia has been found in some of the pineapple fertilizer, yet I can show pineapple fields at Boynton where about the only source of ammonia they have had is sulphate of ammonia, and yet they are the finest in that section.

We have also found that the combination of plant food has a great deal to do with it.

In those fields we consider we have met with great success, and yet we have picked only two pineapples. I say it is a success, because we have found out there what not to use, what combinations not to put together. In one instance, we found sulphate of ammonia, as the source of ammonia, combined with kainit, as the source of potash, very detrimental. And yet, taking these same sources of

ammonia and potash, and where they were not combined, we obtained good results.

We hope by the time these experiments are completed, not only to be able to show what is best to use, but what combinations are best to use.

We also put in an irrigating plant; we are going to irrigate some beds every

month in the year. Just as soon as we put in the irrigating plant, however, the Lord commenced furnishing all the water we wanted, so we have no data on that point. If we keep our patch long enough, and the irrigating plant long enough until the dry cycle comes around again, we hope to carry on those experiments.

Discussion on Tropical Fruits

Mr. Hume: We will now take up the next topic; that is the subject of tropical fruits. In looking over the audience, I do not believe there is a single member of the committee here. Isn't Mr. Gurney here? Mr. Painter says he was here a minute ago.

Mr. Gurney: I am not posted along the line you asked from me. I asked Mr. Painter not to "Jack" me up about it, but he doesn't tote fair. I wrote to Mr. White, of Hawaii, and told him if he would write a paper and send it to us, the Society would rise up and call him blessed.

Mr. Hume: I have a few notes from Mr. C. G. White, which I shall read:

NOTES FROM MR. WHITE.

Being in Hawaii, perhaps I ought to know something of tropical fruits; but I know little actually outside of pineapples, and so cannot help the Tropical Fruit Committee as much as I would like.

The Experiment Station here is perfecting some self-pollinating strains of dwarf pawpaws that are very nice.

We have all been scared about the Mediterranean fruit fly—but we are in hopes now that it was mostly scare. Several places on this island have been badly infested for a season, and then the infliction has almost passed. Just why is not definitely known, but it looks as though the ants like fly diet, and clean out the fallen fruit.

Some years ago one of the members reported that no really satisfactory tree-wound paint was known. The best thing I have found in my yard has been a thick bath-tub enamel. I am not prepared to say that it can't be beat, but I mention it.

I understand that last year's pack of Hawaiian pines was over eleven hundred thousand cases, and the expectation is that it will be half a million cases more in two years. The business is in good shape.

The best peach that I have tried here is Hall's Yellow.

California peaches are failures here.

Mr. Gurney: I have not had much experience except along a line which I do not recall seeing mentioned in this Society in the last ten years; that is, guavas.

Mr. Hume: That is why you were put on the committee, because we thought you could tell us about that fruit.

Mr. Gurney: I don't suppose many of you remember, but fifty or sixty years ago the guava jelly that was sold was solid and black like tar, and tasted something like it. I picked up a few points from Mrs. Jameson and from the lady who took the premium at the Paris Exhibition, and I got some information to help me out from Professor Van Deman, then at the head of the Agricultural Department. He gave me not only information, but help.

Now, the main thing to remember, is that all guavas will not make the best guava jelly. There are different kinds of guavas.

I was nine years making a grove of 1,000 trees. I grew them to one stalk, and then they went down in a single night.

When the Buffalo Exposition was on, Mr. Van Deman wrote me to send him some jelly. I declined. He wrote me the second time. I picked out some I had on hand at the time and sent it to him. After the Exposition was over, he sent me word that I had received the first prize.

Now, I don't like to take up the Society's time by telling you these things, but if there are any questions you would like to ask, I will be glad to answer them.

Mr. Hamlin: I would like to ask one question. We can grow freely in this section, the Cattley guava. Is that a good guava jelly?

Mr. Gurney: They are no good for a good jelly, in my opinion. Of course, I don't know what you have done with it here. When you are growing them, you might as well grow a good one. There are different kinds of guavas; a man in Jacksonville told me of some lots of guavas he got that were the worst he ever struck in his life, and said he could not make jelly.

Mr. Hume: Mr. Brown, you have had some experience with the Cattley guava. What do you think about it?

Mr. Brown: The Cattleys we planted bear profusely, but the fruit is not especially good. We cannot get our neighbors to assist us in using them, but they

make a beautiful hedge. I have some fifteen feet high. I have some that I did not make a hedge of that stand about twenty feet high, and make a beautiful shade to cover up a little tool house.

Mr. Goodwin: In our section we grow all the varieties of guava, but I have had no experience with the Cattley, the red variety, but the yellow variety, or Yellow Chinese, makes an excellent jelly, in my opinion far superior to the ordinary jelly. The Chinese has a peculiar aromatic flavor, and in preserves and jelly they are very fine.

A Member: What combination do you make? What do you put with it?

Mr. Goodwin: If Mrs. Goodwin were here, she could tell you. I can't say just what is put with it.

Mrs. Rolfs: I have not used the Cattley guava, but I have used the other guavas a great deal to make jelly. I have taken a few combinations of the red and yellow, but as a success in making jelly from the ordinary guava, I think I am a failure.

Mr. Goodwin: There seem to be several varieties of the common guava. We have obtained a variety from Miami which is a so-called seedless. It is very large. There is a very small percentage of seeds. I had a sample that weighed nearly a pound. I took out 104 seeds from that seedless guava. It is rather insipid in taste, and it makes a white jelly. The varieties growing on my place are red and white varieties, and some of them are sweet. With the sweet variety there seems to be difficulty in making it "jell," but by adding lime juice it makes it all right. With the sour

guavas you almost always meet with success.

Mr. Cox: Some few years ago my wife made a great deal of jelly, and she found it was necessary to use lime juice to make good jelly. I suppose it was because the fruit itself did not contain enough acid.

Mr. Gurney: Mr. President, it was because he did not have the right kind of fruit.

Professor Rolfs: I might add one word to the discussion. The question that is most persistently asked in connection with the guava, is that of propagation. It seems that it is not generally known that we can propagate it readily by root cuttings. Make root cuttings from the roots as large as lead pencils or a little larger, and about six inches long, in the ordinary way of making cuttings. They strike quite well under good conditions, if you observe necessary precautions for striking cuttings; in fact, they strike very readily.

There is an important point to keep in mind here, and that is to get good varieties of guavas. In our experience with guavas we have had one that weighed eleven ounces. We tried to give the fruit away, but people would not have it, and we did not like it on the table at home. It had a strong guava flavor and odor, and that was about all there was to it.

The same is true of the sweet guava. We should have two classes of guavas; the table guava and the jelly guava.

Mr. Gurney: A couple of seasons ago a gentleman who had been in Honduras was at my place, and I gave him

some guavas. I gave him a few of what I called a "table" guava. He said he never ate a better guava in Honduras in all the time he lived there, and I agree with Professor Rolfs that we should select them for eating and for making jelly.

Professor Rolfs: We had one tree we kept for table use, and I would just as soon have a fruit from that tree as an apple or any other fruit. The outside is yellow and the inside is a beautiful pink. A person has the advantage of gratifying two of his senses, for it is delightful to eat, and it is beautiful outside, and when he bites into it, it discloses that luscious pink center. There are a goodly number of others we kept for jelly purposes only; some of them are sour and puckery.

Mr. Hume: Before closing the discussion I would like to ask Mr. Goodwin if his Yellow Cattleyas are as thrifty as the red ones.

Mr. Goodwin: I think they are.

Mr. Hume: In relation to the further portion of this same topic, I have a letter from Mr. Reasoner. He was with us, but apparently has left. There are some questions he would like to bring to your attention, and if there is any one who can discuss them, I would like to hear from him. His first question is with regard to the failure to set fruit on blooms of the Mango and Avocado trees. Professor Rolfs, have you thought there was anything at the bottom of it besides the fungus?

Professor Rolfs: There is a whole lot at the bottom, and a whole lot of it is carelessness on our own part. We are not studying it carefully enough. We do

not know what are the best fertilizers for avocado yet, and there are many other things we do not know about the question. Last year the failure of the bloom to set was due to two agents: First, the withertip fungus which has been quite common from year to year for a long time in the avocado orchards. Then in addition to that we had a severe infestation of the thrips, but in those cases where both the thrips and the withertip fungus were controlled, a fair setting of fruit was obtained.

However, there are a lot of avocado trees which normally should be bearing, which will not set. In 1903 or 1904, I checked over the bearing trees along the East Coast. I visited about 90 per cent. of the bearing trees, and found that of all the seedlings, we should not expect more than about 3 per cent. to be really prolific, bearing trees. That brings to us clearly, the necessity of using only budded or grafted trees. We still have orchards of budded trees where we are losing crops, but the failure of the crops is usually due to the withertip that causes blight. On top of this, we have the thrips, the same species that causes the trouble in the citrus blooms. But, all things considered, I was surprised at what came out of Florida in the line of fruit, in spite of the total ignorance on the part of those most concerned, as to the proper methods of handling them.

I believe that covers the point as far as we know about it.

What I have explained about thrips and bloom blight, on the avocado, is practically applicable to the mango. I find this year that where people have sprayed

pretty thoroughly with the Bordeaux Mixture they have got a pretty good setting; that is, from the December bloom, and where no spraying was done, the bloom was lost. Simply spraying with Bordeaux Mixture will often help you to have a large crop, especially if it is due to the withertip fungus. If due to the thrips, then you must use the solution for thrips; that is, the tobacco and sulphur mixture. |

Mr. Goodwin: I would like to call attention to a tree which was planted in 1890. The tree is exceedingly large, and never set any fruit I know of, except one year. That year there were a number of pineapple plants growing under the tree, and we grubbed them out and worked them into the soil, and that season it set a heavy crop of fruit on the west side of the tree, where there was very little sun, but on the east side, very few. This year it has set a few.

Professor Rolfs: I would not advocate that as a general practice, to bring it into bearing.

Mr. Robinson: I saw Mr. Reasoner putting wire bands around avocados and mangoes that had failed to bloom, for a few weeks, letting them cut into the bark, with the same idea, I suppose, of checking growth.

A Member: In other words, it makes a tree sick, and it bears fruit in self-defense.

Mr. Hume: I don't know that we can say it makes the tree sick. But it interferes with the normal growth.

Professor Rolfs: I do not think we can advocate that. In the early '90's we had a great many navel orange trees in

the State. We had these same remedies recommended right along for making them bear. After they had all been tried out, they did not bring results that were really worth while. If we have a variety not normally fruitful under our climatic and weather conditions, we had better discard it. We have to give them enough care anyway. Take some of the varieties of mangoes; the one that has been advertised more than any other, is the Mulgoba. I know where there are hundreds of trees of them, and the whole amount of fruit the Mulgoba has produced would not pay for what the trees cost in the nursery. It is simply a non-fruited variety under our conditions. I am told it is quite a non-fruiter in India, and yet one year the tree Professor Gale had, bore a very large crop, and with no abnormal conditions, so far as we could see. We do not know what it is that is really the primary determining factor in making these trees bear. Nothing abnormal was done to Professor Gale's tree, and yet it produced a large crop of fruit, but only that one year.

Mr. Robinson: I do not mean to say that Mr. Reasoner was doing this as a general practice, but he had a few trees from which he had never procured fruit, and he tried to force them abnormally into bearing.

Mr. Marks: Do you think it possible that the ground might be too moist? The reason I say that is this; I am at Winter Haven, a high pine land country. In a grove there, there are about twenty-five or thirty mango trees, and every other year they carry a big crop. That grove, by the way, is well taken care of, and

the regular orange tree fertilizer is used on them. Whether or not that is right, I cannot say, but judging by the results, it must be.

Mr. Yothers: I want to talk to you about the weevil. About ten days ago I received a copy of the Experiment Station Record, which gave an account of Mr. Russell's paper given before the Washington Entomological Society, in which he stated he had observed the weevil on the seeds of avocadoes sent in to him from Central America. I wrote to the chairman of the Federal Quarantine Commission and told him it would be advisable to bar them from this country because of the danger of introducing this weevil. It seems to me that the people of this State, and especially those around the Miami section, should take some interest in the matter, and if sufficient interest is shown they could probably get a Federal quarantine against them. We all know how serious this is, but it is not enough to say merely that it is serious.

Mr. Yothers: I might say that the Bureau of Entomology has a man in Monticello now whose sole business is to investigate the insect pests which attack the pecan. Mr. Gill is the investigator, and if any of you have trouble with pecan insects, he will be glad, I am sure, if you will write to him about it.

Mr. Hamlin: I would like to ask if anybody in South Florida has ever grown pecans successfully, as a commercial venture?

Professor Rolfs: Our President knows more about pecans than anyone else; I suggest that he answer it.

Mr. Hume: I would answer the ques-

tion by saying "no." I believe that a few trees may be planted for home use on certain soils, but for anyone to go into it commercially pretty well down the State, I could not advise.

Mr. Goodwin: I would like to ask a question about the pawpaw. How can you propagate it? Is it necessary to graft it? Can it be grown from the seed?

Mr. Hume: It is being successfully grafted. I have seen the plants, and have them. The seeds can be planted in January and grown for a time, then grafted, and in March or April they are ready to set out and you can have fruit from them that summer.

In the pawpaw there are flowers of two sexes; the pollen-bearing and the pistillate. That is one of the difficulties with the seedling trees; you don't know when they are young, whether they will bear fruit or not. By budding and grafting the trees, you are sure of getting bearing trees. In going back to the parent plant you can get just what you start with; with the seedlings you are guessing. And it has been successfully done.

I have a letter from Mr. White, of Hawaii, in which he touches upon certain lines of this work being done in Hawaii.

Mr. Goodwin: I have three distinct plants, all grown from the same fruit. One bears the fruit on the trunk; the other on a long stem.

Mr. Hume: That is a perfect flowered specimen; the ones where the fruit is grown close to the trunk are pistillate, as a rule.

Now, then, we have another one that has these long flowers that never bears

any fruit. It is staminate only. They are working it out in Hawaii, getting a self-pollinating strain with the stamens and pistil in the same flowers.

A Member: Can you bud on seedlings, of any kind, so that they will come true?

Mr. Hume: Yes; that makes no difference.

Professor Rolfs: I wish you learned people would not call it pawpaw. Call it papaya, as they do nearly all over the world.

We have several trees or plants at Miami that had still another sexual strain than the ones Professor Hume mentioned, and that is a perfect flower and the fruit borne near the central axis. Unfortunately, the fruit was not very delicious, so we discarded it on that ground, but that plant went so far that in some cases the anthers were borne right on the corolla. It was very easily possible to pollinate it from its own pollen.

We should not use the seedlings, but use the tree of a known variety, and the way to get your buds from that is simply to top your tree. Cut the top out and you will have some hundreds of the buds to come out, and they graft very easily. I did the first by inarching, but we found afterwards it can be done by the clumsiest kind of grafting. The grafting is really more simple than budding.

Mr. Gillette: Can any of those plants be secured?

Professor Rolfs: You may be able to get the buds of good varieties from Mr. Simmons, but whether you can get them or not, I don't know. They have so small an appropriation to work with.

Mr. Hume: I think you might be able

to get some. About six months ago—this is a subject in which I have been interested for a long time—I had eaten some papayas that were very delicious. I knew the Department had been introducing them, and as soon as the matter of propagation came up, I got about two dozen plants of the very best varieties. They were shipped to me wrapped in the ordinary way in pieces of paper, and they are all growing nicely.

If you cannot get them right now, but make known your wishes in the matter, you will probably stand a chance of getting them some time. I had to wait about six months before I could get any. Write to the Department of Agriculture at Washington. All of that work of distribution goes through the Washington headquarters; write there, and Mr. David Fairchild, of the Agricultural Department, will see that your name is entered on the list.

Mr. Moses: I have been growing papayas for several years from seedlings, from planting seeds, and I always chose the very large fruit when I could get it. Almost always, when they fruited, the fruit would be smaller; perhaps but little bigger than my fist, where the parent fruit would be as large as a cantaloupe. The plants had all the attention I was capable of giving them in the ordinary way, and ample fertilizer. There was a good soil and plenty of humus.

Professor Rolfs: In the case of papaya as in the case of pecans and all of our fruits affected by direct pollination, when you use the seedlings, the chance of getting as good a fruit as the fruit which contained the seed, is very small.

In the case of the avocado, usually you get fruit about as good, three times out of a hundred. In the pecan, you will not get one tree out of a hundred; a good, paper-shell pecan.

In the case of citrus and mangoes, we fall into a different class, and it does not hold true as much as with pecans and avocados and fruits of that kind. This is true in a great variety of plants. The case is different in citrus and mangoes, where the progeny holds up to the parentage on the average, and a reversion is really an exception.

Mr. Goodwin: Mr. Moses' section is probably like mine; the woods are filled with what is known as the wild papaya. The pollen carried from male plants, perhaps, has something to do with the small size of his fruit from seedlings.

Mr. Moses: The nearest wild pawpaw is at least three-quarters of a mile from my tree. I have been on the place, however, so perhaps that is how it occurs.

Mr. Gillette: My experience has been the same as that gentleman's. I remember particularly when I was in Cuba, I took breakfast at the house of a friend of mine, and we had a pawpaw for breakfast. I never had eaten one before, and it was delicious. The quality was as good as a cantaloupe. I told him I wanted some of the seed. They were very large; ten or twelve inches long, and shaped a good deal like a muskmelon. I planted the seeds, and was very much disappointed when they began to bear, to find I had a small fruit. There are no wild pawpaws growing in our neighborhood at all. Most of them were sterile, but some of them bore, and they had

little bits of fruit on them. It is a question of chance, of course, as the professor has explained. One time you may get something as good, or even a little better than the parent, but as a rule they sport and retrograde.

Mr. Goodwin: Seeds from the same fruit will produce both the large and the small varieties.

Mr. Moses: I would like to say that, even in growing the small ones, if they are not too small, they are very palatable.

They have an enemy that attacks the base of the fruit stem; a borer, a small green worm. I do not know what moth lays the egg, but it is very difficult to raise a perfect fruit.

Professor Rolfs: Have you tried contact insecticides, such as Whale Oil Soap?

Mr. Moses: I have sprayed with Whale Oil Soap.

Mr. Goodwin: It has also another enemy; a little patch that forms and gradually spreads, sometimes when it is green and sometimes when it is ripe, that causes a little rotten spot.

Dr. Berger: Since you have gotten on the enemy line, there is another, that is a fly that deposits an egg in the inner flesh. When it is able, it deposits the egg in among the seeds. Of course, those fruits are ruined. That fly exists in the Miami section.

Mr. Hume: They probably got it from Cuba.

Dr. Berger: I presume so. The way to get around that would be to select your buds from the very thick-fleshed varieties, so that the fly cannot get its egg through into the seed. They have

to get it into the seed, and in that way you can get ahead of the fly. Get a thick-fleshed variety, and the egg is destroyed in the flesh.

Mr. Yothers: Some time last October, Mr. Marlatt, who is chairman of the Federal Quarantine Board, sent me on a more or less secret mission to find out if it was the Mediterranean fruit fly, and I assure you there was considerable anxiety felt by Mr. Marlatt and myself. Further investigation showed that this fly showed up at Natal and the British possessions. That brings up another point; all these fruits from this country should be quarantined to prevent the further introduction of this fly. I do not know that it will do much good to lock the barn after the horse is stolen.

Mr. Hume: We are trying to get this through the Federal Department and our own Legislature. We hope to report we have succeeded.

Mr. Gillette: It would be the solution of the tariff problem.

Mr. Hume: It would be a fine one, indeed.

Mr. Spalding: I wonder if it is too cold to grow papayas successfully here?

Mr. Hume: If you had some way of starting the plants early in a hot-house with no danger of freezing, and sow your seeds about December or early January, they would probably fruit the same season. They are almost like a vegetable. Mr. Painter tells me he fruited them in Jacksonville last year.

Mr. Goodwin: If they freeze even down to the ground, if the trunk is somewhat large, they will come up the next season.

The Ripening of Oranges

A. M. Henry.

The Legislature of 1911 passed the Immature Citrus Fruit Law, which was designed to prohibit the shipment of green, unripe, immature citrus fruits, but did not define citrus fruits that were green, unripe, and immature. Owing to the confusion and uncertainty having arisen by not having a definition or standard for immature fruit, the Commissioner of Agriculture appointed in 1912 a commission to propose such a standard. This commission proposed a tentative standard for oranges that was later approved and adopted by a convention of orange growers, and is as follows:

"One. All round oranges showing a field test of one and twenty-five hundredths (1.25) per cent. or more of acid, calculated as citric acid, shall be considered as immature.

"Two. Provided, however, that if the grower (or shipper) consider the fruit mature he shall have the right to appeal from the field test, to the State Chemist for a chemical analysis, and if this chemical analysis shows that the percentage by weight of the total sugar, as invert sugar, be seven times or more than the weight of the total acid as citric acid, the fruit shall be deemed mature.

"Three. That the juices of not less than five average oranges shall be mixed

from which a composite sample shall be drawn for the field test.

"Four. That the juices of not less than twelve average oranges shall be mixed, from which a composite sample shall be drawn for the laboratory analysis.

"Five. Provided, that after the fifth day of November in each and every year the standard shall be, that if each orange is two-thirds its total area colored yellow, it shall be considered as mature and fit for shipment. That no variety of oranges or grapefruit shall be allowed to be shipped before the first of October of each year that has bloomed during that calendar year."

As a result of this condition this work has been undertaken by the Division of Chemistry of the Department of Agriculture of Florida to provide data from which a permanent and simpler standard could be adopted. In this connection 259 analyses of oranges from seventeen different localities and 90 samples from various other localities in Florida were analyzed the past season. It was shown by this work that great care must be used in selecting the sample, particularly of oranges in the early fall. Below are given analyses of oranges from the north, east, south and west sides of a tree early in October, which shows the great variation in the composition of or-

anges, caused by varying amounts of sunlight:

Side of Tree	Sugar	Acid	Ratio of Acid to Sugar
North -	7.17	1.69	I to 4.24
East ---	7.70	1.32	I to 5.83
South --	7.96	1.32	I to 6.03
West --	7.31	1.47	I to 4.97
Average	7.54	1.45	I to 5.20

From this table it will be seen that there was 0.79 per cent. more and 0.37 per cent. less of acid in the fruit from the south side of the tree than in the fruit from the north side of the tree. Consequently it is seen that the utmost care must be exercised in order to get an average sample of the oranges to be tested. The total sugar as invert sugar, the total acid, as crystallized citric acid, the ratio of the total acid to the total sugar, and other determinations were made.

A careful study of the climatological data for temperature and rainfall for the orange section was made, but no conclusions could be drawn from one season on-

ly. The study began in October after a very heavy rainfall for the orange section for September, over 11 inches, with decreasing amounts for each succeeding month. The fall and winter had been unusually warm, with the warmest January since 1892. It would take analyses from numerous localities for several seasons to draw conclusions of any value in regard to the influence of seasonal variations on the composition of the orange. An attempt was made to correlate the irregular decrease of the acid content of the orange with the rainfall, but without success. The observations on the location, in the extreme northern part or the extreme southern part of the orange section, did not show that the difference in climate between them had any effect as to the date of maturing. The peculiarity of the individual varieties of the orange is the only influence that was noted to have an effect on the date of maturity.

The oranges of which this study was made were as follows:

VARIETY.	PLACE.	COUNTY.	GROWER.
Seedling	Alva	Lee	Edward Parkinson.
Seedling	Clearwater	Pinellas	Marshal, Brandon & Bass.
Seedling	Tavares	Lake	Woodlea Company.
Seedling	Lake Helen	Volusia	Mace & Son.
Seedling	Winter Haven	Polk	Boyd Bros.
Parson Brown	Lake Weir	Marion	Carney Invesment Company.
Seedling	Punta Gorda	DeSoto	J. M. Weeks.
Seedling	Wauchula	DeSoto	S. B. Hogan.
Valencia	Tildenville	Orange	L. W. Tilden.
Seedling	Tampa	Hillsboro	Eugene Holtsinger.
Seedling	St. Petersburg	Pinellas	George O. Osborn.
Seedling	Lakeland	Polk	G. P. Quaintenance.
Seedling	Manatee	Manatee	H. T. Bennett.
Seedling	Orlando	Orange	C. W. Townsend.
Seedling	Buckingham	Lee	D. S. Borland.
Seedling	Mt. Dora	Lake	Charles Edgerton.
Pineapple	Orange Lake	Alachua	G. B. Crosby.

The following tables give the average composition of the oranges from the first nine of the above localities for each week from October 1 to January 31:

Week Beginning	Total Sugar as Invert (per cent.)	Total Acid as Crystallized Citric Acid. (per cent.)	to Sugar. Ratio of Acid
Oct. 1 -----	5.63	1.92	1 to 2.93
Oct. 8 -----	5.92	1.76	1 to 3.36
Oct. 15 -----	6.42	1.51	1 to 4.25
Oct. 22 -----	6.50	1.43	1 to 4.55
Oct. 29 -----	6.67	1.30	1 to 5.13
Nov. 5 -----	6.78	1.30	1 to 5.22
Nov. 12 -----	6.97	1.38	1 to 2.05
Nov. 19 -----	7.45	1.25	1 to 5.96
Nov. 26 -----	7.54	1.15	1 to 6.56
Dec. 3 -----	7.84	1.07	1 to 7.33
Dec. 10 -----	7.89	1.09	1 to 7.24
Dec. 17 -----	8.18	1.01	1 to 8.10
Dec. 24 -----	8.05	1.03	1 to 7.82
Dec. 31 -----	8.36	1.01	1 to 8.28
Jan. 7 -----	8.69	0.93	1 to 9.34
Jan. 14 -----	9.08	0.95	1 to 9.56
Jan. 21 -----	8.97	0.92	1 to 9.75

The conclusion that can be drawn from this study, while brief, is important.

After a careful examination of the data contained and that relating to the composition of the orange, the conclusion

is that a cheniical standard is the only fair one for an orange. Of course, even in applying an automatic chemical standard, common sense will have to be used. Any of the physical standards that may

be suggested, such as color of rind, color of pulp, appearance of seed, taste, etc., or even a combination of all, could never be practically applied with any justice, by different inspectors in different localities, on account of the differences between man and man and the impossibility of preparing concrete standards to which the different oranges could be compared.

A careful examination of the facts in this study will show the injustice of setting a definite date on which to begin shipping, or even a different date for each variety.

While there are a few well defined varieties, the large majority of oranges in Florida vary from each other by such minute physical differences that it would be impossible to differentiate between varieties, particularly after the oranges were removed from the trees.

It is evident that for scientific accuracy and ease of practical application, the chemical standard should be as simple as possible. While the ratio of acid to sugar can be so fixed that oranges that are evidently immature will fall on one side, and those evidently mature will fall on the other side, it is as accurate, if not more so, and much easier to fix a percentage of acid that will divide those evidently mature and immature into two classes. Of course, whatever standard, chemical or otherwise, is used, there will always be cases where the question of maturity will have to be left to the standard, rather than to the senses. It is our conclusion that a standard of 1.25 per cent. of total acid is scientifically accu-

rate, fair and just to the producer and consumer alike, and of the greatest ease of practical application to the orange industry.

While oranges that contain not more than 1.30 per cent. of total acid will vary from sweet to rather tart in taste, and probably will have a greater variation in flavor and taste than those with a greater ratio of acid to sugar than 1. to 7, they will always be edible and desirable fruit. Of course, there is occasionally freak fruit that would pass any standard adopted and still be inedible and undesirable fruit, but such cases call for the application of common sense with the standard.

RECOMMENDATIONS.

While it is not in the province of this study to recommend a law fixing the maturity of oranges, it is, however, the object to recommend a standard for oranges to be embodied in whatever law Florida has, or will have, on the maturity of citrus fruit. It is also recommended that the method of obtaining a fair and accurate sample, the procedure of the field test, and laboratory method for the determination of acid should be made a part of the law, in order that uniform methods, terms, and definitions, be used in all cases for the enforcement of the law, by officers charged with the execution of the law.

STANDARD.

The standard recommended is:

Orange, sweet orange, is the ripe, mature fruit of *Citrus aurantium L.*, the juice of which contains not more than

one and thirty hundredths (1.30) per cent. by weight of total acid, determined as crystalized citric acid.

SELECTION OF SAMPLE.

Two samples of twelve average oranges each, fairly representative of the fruit to be tested, should be selected by the inspector in the presence of the person in charge. One sample should be sealed and set aside, and the field test applied to the other. In case the person in charge should appeal from the result of the field test, as applied by the inspector, the duplicate sealed sample should be packed, sealed, and signed by the inspector, in the presence of the person in charge and two witnesses. The person in charge of the two witnesses shall witness the package by signing their names after that of the inspector. The package of oranges shall then be sent by parcel post or prepaid express to the Division of Chemistry, of the Florida Department of Agriculture, at Tallahassee.

FIELD TEST.

Apparatus and Chemicals.—One two-quart granite-ware cup.

One wooden lemon-squeezer.

Cheese cloth strainers, 18 inches square.

One white porcelain tea-cup.

One pocket knife.

One pipette, 25 cc.

One eight-ounce graduated bottle.

One box Farrington Alkaline tablets.

Preparation of Alkaline Solution.—Place 100 of the Farrington alkaline tablets in an eight-ounce graduated bottle,

fill up to eight-ounce mark with pure distilled or rain water, stopper well, and shake frequently for at least three hours before using solution. The solution will have a pink color with a white sediment.

Method.—Peel twelve oranges selected as directed, cut in half across segments, squeeze the halves with the lemon-squeezer into the granite-ware cup through a piece of cheese cloth placed over it. Squeeze out the cheese cloth gently and throw away. Then stir the juice in the cup well but gently. Rinse the pipette with the alkaline solution, empty it, then fill to mark with the alkaline solution and empty into tea-cup. Then rinse the pipette with the orange juice, and empty, fill to mark with orange juice, and while revolving the tea-cup let the orange juice run slowly from the pipette into the tea-cup. Mix the orange juice and alkaline solution thoroughly.

If the orange is immature and contains more than 1.30 per cent. of acid the mixture in the tea-cup will be more or less deeply orange colored.

If the orange is mature and contains more than 1.30 per cent. of acid the mixture in the cup will be more or less pink in color.

In the following table are given the samples of oranges that analyzed less than 1.30 per cent. of citric acid by the Division of Chemistry last season. Under the heading of "Grower and Address" is given the name and address of the person from whom the oranges were received, but in some cases they were

probably grown by some one else. The variety given is that reported by the grower, but we are convinced that there is a great deal of confusion of varieties, and that in numerous cases the variety given is not correct.

LAKE COUNTY.

GROWER AND ADDRESS.	VARIETY.	DATE	ACID (Per Cent)
E. B. Peters, Leesburg	Parson Brown -----	Sept. 20	0.78
Johnson & Co., Leesburg		Sept. 31	1.01
E. H. Mote, Leesburg	Parson Brown -----	Oct. 1	1.16
R. L. Collins, Umatilla		Oct. 1	1.12
R. L. Collins, Umatilla	Seedling -----	Oct. 31	1.06
A. H. Souter, Astatula	Seedling -----	Oct. 31	0.73
C. Edgerton, Mt. Dora	Seedling -----	Nov. 16	1.29
Woodlead Co., Tavares	Seedling -----	Dec. 27	1.27

ORANGE COUNTY.

A. J. Nye, Orlando	Blood -----	Sept. 23	1.08
S. J. Sligh, Orlando	Sweet -----	Sept. 26	0.99
S. J. Sligh, Orlando	Seville -----	Sept. 26	1.19
A. J. Nye, Orlando	Parson Brown -----	Sept. 29	0.70
S. J. Sligh, Orlando	Navel -----	Oct. 25	1.11
Overstreet & Drew, Orlando	Parson Brown -----	Oct. 26	1.22
C. W. Townsend, Orlando	Seedling -----	Nov. 18	1.24

DE SOTO COUNTY.

W. E. Harrison, Ona		Sept. 30	1.05
DeSoto Fruit Co., Arcadia	Navel -----	Oct. 15	1.12
D. N. Barco, Arcadia		Oct. 21	1.21
Scott Bros., Arcadia		Oct. 21	1.30
J. M. Weeks, Punta Gorda		Oct. 21	1.21
S. J. Carlton, Arcadia		Oct. 21	1.27
DeSoto Fruit Co., Arcadia	Seedling -----	Oct. 24	1.24
A. B. Williford, Arcadia	Seedling -----	Oct. 23	1.25
C. J. Carlton, Wauchula		Oct. 28	1.10
S. B. Hogan, Wauchula	Seedling -----	Oct. 30	1.23
A. B. Williford, Fort Green	Seedling -----	Oct. 29	1.26
Arcadia Citrus Growers' Packing House, Arcadia	Pineapple -----	Nov. 1	1.24
W. F. Harris, Ft. Myers	Seedling -----	Nov. 2	1.16
Scott Bros., Arcadia	Pineapple -----	Nov. 1	1.18
Rainey & Hardee, Wauchula		Nov. 4	0.97
Rainey & Hardee, Wauchula		Oct. 29	1.30

MANATEE COUNTY.

H. T. Bennett, Manatee	Seedling -----	Oct. 18	1.22
K. S. Parrish, Parrish		Oct. 13	0.79
K. S. Parrish, Parrish		Oct. 13	0.98
Nocatee Fruit Co., Nocatee	Seedling -----	Oct. 26	1.28

FLORIDA STATE HORTICULTURAL SOCIETY

VOLUSIA COUNTY.

GROWER AND ADDRESS	VARIETY	DATE	ACID (Per Cent)
Geo. E. Tedder, DeLeon Springs-----	Sweet Seville -----	Sept. 30	0.68
Mace & Son, Lake Helen-----	Seedling -----	Oct. 29	1.28
Mace & Son, Lake Helen-----	Jaffa -----	Oct. 30	1.10
Mace & Son, Lake Helen-----	Ruby -----	Oct. 30	1.12
Mace & Son, Lake Helen-----	Homosassa -----	Oct. 30	1.30
Mace & Son, Lake Helen-----	Prie Seedling -----	Oct. 30	1.12
Mace & Son, Lake Helen-----	Pineapple -----	Oct. 30	1.10
Mace & Son, Lake Helen-----	Tangerine -----	Oct. 30	0.98

HILLSBORO COUNTY.

S. E. Mays, Plant City-----	Seedling -----	Oct. 1	0.78
S. E. Mays, Plant City-----	Seedling -----	Oct. 9	0.95
Wiggins & Daniel, Plant City-----		Oct. 14	1.10
W. C. Hathcock, Plant City-----	Seedling -----	Oct. 22	0.80
E. Holtsinger, Tampa-----	Seedling -----	Nov. 1	1.08
E. Holtsinger, Tampa-----	Seedling -----	Dec. 21	1.21

SUMTER COUNTY.

J. C. Smith, Bayhill-----		Oct. 3	1.04
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CITRUS COUNTY.

D. A. Tooke, Floral City-----	Parson Brown -----	Oct. 7	0.87
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LEE COUNTY.

S. P. Bruton, Ft. Myers-----	Seedling -----	Oct. 9	0.73
S. P. Bruton, Ft. Myers-----	Hammock -----	Oct. 15	0.69
S. P. Bruton, Ft. Myers-----	Seedling -----	Oct. 15	0.59
Edward Parkinson, Alva-----	Hammock -----	Oct. 18	1.30
Edward Parkinson, Alva-----	Seedling -----	Oct. 18	0.62
D. S. Borland, Buckingham-----	Parson Brown -----	Oct. 25	1.25
	Seedling -----		

PASCO COUNTY.

J. T. Futch, Dade City-----		Oct. 17	1.00
J. T. Futch, Dade City-----		Oct. 24	0.93

OSCEOLA COUNTY.

Chase & Co., Kissimmee-----		Oct. 13	0.65
Chase & Co., Kissimmee-----		Oct. 13	0.78

PINELLAS COUNTY.

GROWER AND ADDRESS	VARIETY	DATE	ACID (Per Cent)
Ozona Fruit Co., Ozona-----		Nov. 4	1.25
Marshal, Brandon & Bass, Clearwater-----	Seedling -----	Nov. 5	1.27
G. O. Osborn, St. Petersburg-----	Sweet Seville ----- Seedling -----	Dec. 10	1.28

POLK COUNTY.

Boyd Brothers, Winter Haven-----	Seedling -----	Nov. 5	1.29
G. P. Quaintenance, Lakeland-----	Seedling -----	Nov. 28	1.18

MARION COUNTY.

Carney Investment Co., Lake Weir-----	Parson Brown -----	Sept. 28	0.98
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ALACHUA COUNTY.

G. B. Brosby, Orange Lake-----	Pineapple -----	Oct. 17	1.20
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Fertilizer

Wm. M. Atwater.

The subject of fertilizer in connection with our citrus groves will be studied more closely in the future than in the past, particularly to the grower who is engaged in the industry for profit, will this be a very important subject.

The continued advance in the prices of materials entering into the manufacture of this product, together with the reduction of the tax on the importation of citrus fruits, will tend to make us careful that we get every return possible from the fertilizer fed to our trees.

We all know in a general way what our trees require, but nearly every grower has his own ideas as to when and the amount to apply.

I regret that I have not had more time to spend in my neighbors' groves, because much can be learned from the experience of others and results witnessed in the trees, so the best I can do in this instance is to give my experience with my own trees.

Let me first state that my grove is located on high sandy land, what is called spruce pine land; there is quite a slope or fall in the land from the north to the south. It seemed to me that when I fertilized, as I did at first, in January, April and June of each year, that I was not getting the results I should; at least, my trees did not show it, so I went about investigating. I wrote to that

good friend of every citrus grower, Professor Rolfs, and he suggested that he thought I would get better results if I were to fertilize five times per annum, instead of three, putting around the trees the same amount of fertilizer. This I tried, and was rewarded with better results. Still I was not satisfied; thought my trees did not put on enough new growth each year and bear enough fruit. So I decided to fertilize more often, and I now feed the trees each month in the year except during the very heavy rainy season, namely July and August.

My plan generally is as follows: When I have finished shipping I figure up the number of boxes sent to market, and let me say right here that at first I did not take into consideration the fruit dropped from the trees and not shipped, which I should have done, as this year on account of the unusually warm winter, it has been very heavy. After I have secured this data, I figure just how much nitrogen, phosphoric acid and potash I will give to my trees for the twelve months beginning with September of each year. In September I feed them potash and phosphoric acid, the same in October, with November I add a little nitrogen, increasing this quantity in December just a little over November, and continue increasing in January; then during the other months I hold to about

the same amount of nitrogen up to June. Of potash, I reduce the quantity after November, feeding only just what I think the trees need.

By this plan of feeding each month I believe I get better results with less fertilizer than under the former way of fertilizing three times a year, for I feel that with my sandy land and the slope referred to, that much of the food was washed or leached beyond the reach of the trees.

This plan also enables me to supply quickly more of the elements which I think the trees need if they show up badly.

As I use a fertilizer distributer, I can cover my eight acres in a day, and one day each month is not much of a hardship as compared with the old way of throwing it around the trees by hand. This distributer has a gauge regulating the feed from 100 pounds per acre up to 4,000 pounds. It is not as perfect as I would like to have it, feeding more regularly when just loaded than when nearly empty, and it also gives some trouble when the fertilizer is damp, as it sometimes is, during continued wet weather, but some one will improve on these defects and give us a better machine.

Citrus Insect and Disease Conditions—General Summary and Observations

J. A. Stevens.

WHITE FLY.

It is the impression of a great many growers that the white fly is on the decline. Climatic conditions during the past ten or twelve months, lots of rain, coupled with warm weather and the mild winter seem to have aided in the development of the fungous enemies of the whitefly to such an extent as to enable them to gain the mastery for the time being, at least.

Along the border land of white fly infection the fly is still found encroaching on the parts heretofore uninfected. Quite a number of growers have reported finding the white fly in their groves this spring, which have not been infected up to this time. In most cases the growers are alive to the situation, and are taking steps to spray their trees with some good insecticide or to introduce the fungus enemies of white fly. In rare instances, however, an individual grower has been heard to remark that he believes the white fly is dying out, and that it will not be worth while to bother with spraying, or that the fungus will spread of itself and wipe out the white fly. Fortunately, growers with such views are very much in the minority, and it is needless to add are

not progressive enough to be members of the Horticultural Society.

Observations made throughout most of the white fly infected sections of the State bear out the conclusion that a combination method of both spraying with an insecticide and the distribution of fungus parasites give better results in controlling white fly than where either one method is employed without the other.

Those who have employed the double method with success, begin by spraying with a suitable insecticide in the spring soon after the first brood of adult flies have disappeared from the wing. The exact time when such condition exists varies slightly from year to year according to climatic conditions, and is slightly different with different latitudes. There is also some little difference as to time for spraying, between the different species of white fly. When the first swarm of flies appear in the spring, the grower observes them closely, and as soon as they are noticed to diminish in numbers, a date is set about two weeks ahead, at which time he is to begin spraying. When the spraying is begun, great care is exercised in an effort to wet thoroughly the underside of every leaf. The spray destroys practically

every larva that it touches, and greatly reduces the quantity of flies in the following brood.

With the coming of the rainy season, and several times during that period, fungous parasites of white fly are distributed through the trees by means of spraying the trees with water in which fungous-bearing leaves have been soaked until the water has become charged with the fungous spores. The rainy season with its warm, moist atmosphere is conducive to the rapid development of the fungous parasites upon the larvae of the white fly and the increase of the fly is greatly checked.

Wherever the insecticides and fungi have gained the mastery over the fly so that little or no sooty mould is seen on leaves and fruit in the fall of the year, any further spraying before the following spring is hardly necessary, but should the sooty mould appear in quantity, it is advisable to spray the trees in the fall, following the disappearance of the last brood of adult flies with a miscible oil solution in order to remove the sooty mould from leaves and fruit, and such spraying will also destroy such larva as it touches.

This double method—spraying with insecticide and fungus—has apparently given excellent results over a very large portion of the white fly infected area, and seems to be the most economical method as measured by results.

SCALE.

During the summer of 1912 an apparent decided increase of the common scale insects of citrus were noted in sev-

eral widely separated sections, but shortly the fungous parasites of the scale were noticed in abundance attacking the scale, so that comparatively little loss of limbs, due to scale, was noticed. Observations this spring seem to indicate that a very large per cent. of the scale insects have been destroyed by their fungous parasites, and they now appear to be on the decline. Instances are known where scale infection has been exceedingly severe, and where the fungous parasites have not put in their appearance. Such instances usually occur on young trees planted in new localities that have not been set out more than a year, and frequently seem to indicate that the scale had been brought in with the nursery stock.

Where scale infection is severe on young trees the growers find it advisable to scrub the trees. Spraying with some scalicide is resorted to on larger trees, and is usually effective, especially after a second application.

SIX SPOTTED MITE, OR RED SPIDER.

These minute pests which attack the under side of the leaves, usually along the center vein, and cause yellow spots to show through the upper side of the leaves, and also cause the dropping of leaves and young fruits whenever they propagate in sufficient numbers, do not seem to have made themselves felt this spring, except in a few localities where there has been a lack of rain. They are easily destroyed by spraying with a sulphur solution.

PURPLE MITES.

These attack the upper side of leaves and are also frequently the cause of

dropping young fruits in the spring. They cause the leaves to lose their gloss and put on a grayish or ashy appearance. They occur most abundantly during dry weather, especially in the spring, and are easily destroyed with a weak sulphur solution.

Only in rare instances have the effects of purple mites been observed this spring, their occurrence being rather below normal at this season of the year.

RUST MITES.

These attack citrus fruits throughout their entire growing period, and cause the fruit to become discolored, dark or rusty in appearance. This rust affects the selling price of the fruit and also prevents it from growing quite as large as it would if not attacked by the rust mite.

In some sections growers have long followed the practice of spraying their trees with sulphur sprays as a means of keeping their fruit bright, and as a result have marketed their fruit to much better advantage; but in the majority of groves the growers have paid little or no attention to rust mites, and consequently have had a large per cent. of rusty fruit.

During the past year, however, a much larger number of growers than ever before have sprayed their groves several times during the year to destroy the rust mites, and have found their bright fruit has in most cases averaged 50 cents per box higher selling price than rusty fruit. Indications are that a much greater number of growers are preparing to spray for bright fruit this coming season.

FOOT ROT.

Though a stubborn disease, if taken in

time may be cured, or at least controlled. Because of the difficulty of removing the soil from around the crown roots in order to treat them, many growers have neglected their infected trees until the disease has advanced too far, but in some instances where growers have given their trees the proper attention, old seedling groves that have been affected for some years are still in apparently healthy and productive condition, and the foot rot disease, if not cured, is at least held in check.

GUMOSIS OR SHAGGY BARK.

This disease does not seem to be spreading quite as rapidly as it did two or three years ago. As it occurs on the trunks, limbs and branches, which are much easier to get at for the purpose of treatment than in the case of foot rot, growers, as a rule, have employed some method of treatment with the result that the disease has in many cases been cured or controlled. This has doubtless prevented the spread of the disease to the extent that was feared a few years ago.

WITHERTIP.

Has caused the dropping of young fruits to some extent, but as a rule such dropping has not exceeded the usual dropping at this time of year.

MELANOSE.

It is too early as yet to form a definite idea as to what extent melanose will affect fruit this year. Tiny spots of melanose have been observed on the tender leaves of the new growth, but so far it

has not shown on the fruit to any extent.

SCAB.

This fungus disease which of late years has been attacking grapefruit much more than formerly, has this year appeared to much greater extent than ever before. The blooming of the trees has extended over a much longer period than usual, and growers have been somewhat at a loss to know how to go about spraying for scab, fearing that spraying while the bloom was open would cause dropping of the bloom.

Weather conditions which have aided the development of friendly fungi seem to have also aided the development of the scab fungus. Groves that have never before been infected, this year have a great

deal of scab, and in some groves which had a little scab last year, are found trees on which every single grapefruit is affected.

The scab is found on nearly every variety of grapefruit except the Royal, which seems to be practically immune. Growers in one or two sections have thought that grapefruit trees, budded on grapefruit stock, were more susceptible to scab than those budded on rough lemon. This is, however, hardly borne out by observations made in other localities.

Present indications are that a very large per cent. of this year's crop of grapefruit will be unmarketable on account of scab.

Report of Legislative Committee

Mr. Hume: I will now call for the report of the Legislative Committee, if they have anything further to say. Mr. Gillette, have you anything further to present?

Mr. Gillette: At the last meeting of the Florida Horticultural Society, you entrusted to this committee the matter of getting State aid for the Horticultural Society.

As you are all aware, in the years which have passed, we have been generally pretty hard up. It has generally been the case that some of us would have to go down in our pockets and help make up the difference. Luckily, however, we are not in that unfortunate position this year. I understand the treasury is in better shape than it ever has been.

Your Legislative Committee, after due deliberation, decided that it would not be best to make any attempt to get an appropriation from the Legislature just now. We felt we had better get what was in sight and not ask for too much, or we would not get anything. If the Society asked for an appropriation of several thousand dollars in addition to the \$20,000 which it would take to get the crop pest bill, we were afraid neither one would pass and, realizing the greater importance of the crop pest bill, we decided we would not make an attempt this year for an appropriation for the Society. We present this as an excuse for not

carrying out your wishes at the last meeting, believing you would concur with us. I would like to have a vote on this sanctioning our action, or reprobating us at this time.

Mr. _____: I move our concurrence of their action.

(Seconded and carried.)

Mr. Gillette: Since this meeting has been in session, a matter has come up which we knew nothing about until this morning. Judge Stewart, one of the members of the committee, brought a gentleman to me, as chairman of the committee, with this resolution. I took the matter up with Mr. Taber, the only other member of the committee I could find, and he with Judge Stewart, endorsed it, and we now present it to the Society for action.

(Reads resolution.)

Whereas, the great need of our State of Florida today is more adequate means of transportation, and

Whereas, more extensive transportation facilities would greatly develop the thousands of acres of fertile lands now lying idle, by inducing thousands of settlers to locate in our state, and

Whereas, the opening of Mosquito Inlet to deep sea navigation would greatly reduce our freight rates, and supply a much needed means of transportation, therefore be it

Resolved, that the Florida State Hor-

ticultural Society assembled in Annual Session at DeLand, heartily endorse the efforts of the Central Florida Deep Waterway Association in their endeavor to secure a Government appropriation for the purpose of opening the channel through Mosquito Inlet to a suitable depth and width for deep sea navigation, and be it further

Resolved, that copies of these resolutions be forwarded to the Senators and Representatives of the State of Florida in Washington, D. C. and that a copy be spread upon the minutes of this Society.

Seconded and adopted.

See under discussion of the Green Fruit Law for the first section of the report of the Legislative Committee.

ELECTION OF OFFICERS.

For President—H. Harold Hume.

For First Vice-President—H. B. Stevens.

For Second Vice-President—William C. Temple.

For Third Vice-President—L. B. Skinner.

For Secretary—E. O. Painter.

For Treasurer—W. S. Hart.

Executive Committee—P. H. Rolfs, E. S. Hubbard and G. L. Taber.

Report of Necrology Committee

The Necrology Committee submits the following report:

Miss Doris F. Worcester, only child of C. H. and L. E. H. Worcester, Pomona, Florida. Born in Louisville, Ky., June 14, 1896. Died in Havana, Cuba, July 9, 1912. A brief notice of the sad circumstances of Miss Worcester's death appeared at the close of this Society's 1912 proceedings. Attending the Society's meeting at Miami in apparently good health she was taken with typhoid fever on the trip to Cuba, and after a lingering illness died in the hospital at Havana. The heartfelt sympathy of all members of this Society who knew her or of her has been and is extended to her parents, who state "she was a dear child, and all who knew her loved her."

Professor James Willis Westlake, of Lake Helen, was for many years a prominent and active member of this Society. The following very complete notice is from the Florida Times-Union of October 22, 1912:

Lake Helen, Oct. 21.—Prof. James Willis Westlake, one of Volusia county's most respected and prominent inhabitants, passed away at his beautiful home in Lake Helen on October 18 at 2 p. m. Professor Westlake was 82 years of age, and had been in feeble health for some months, and had been confined to his bed for some time. Professor Westlake was born in Devonshire, England, and came to

America when quite young. He was prepared for college at Wyoming, Pa., seminary, and was afterwards graduated from the Union University, of New York, with the highest honors. In 1861 he enlisted as sergeant major in the Twenty-third Volunteer Militia, and served until mustered out. He then taught for many years in prominent schools and colleges. He occupied the chair of English literature in the Baltimore City College, and was also in charge of the same department in the Millersville, Pa., State Normal School for seventeen years.

He was the author of several well known text-books, among them Three Thousand Practice Words, Common School Literature, and many uncollected poems and essays.

He was a charter member of the Psi Upsilon fraternity, a Knight Templar, also a member of Monterey Lodge I. O. O. F., of Lancaster, Pa.

In 1886 he came to Florida and located at Lake Helen, where he lived a quiet, studious life among his books and orange groves.

He was a figure of national importance as author and educator, but people who really knew him recognized in him a man of the gentlest traits, devoted to children and animals, a character of sterling worth, his long life an example. His life was gentle and the elements so mixed in him that nature might stand up and say to all the world, "this was a man."

He is survived by a widow and two daughters, Mrs. S. G. Wilmer, of Baltimore, and Mrs. Charles D. Abbott, of Jacksonville.

The Rev. James H. White, of Island Home, Georgiana, on Merritt's Island, was for many years a member of this Society, and died at the home of his daughter, Mrs. J. B. Bowers, Rock Ledge, Fla., January 24, 1913, aged 89 years, 1 month and 5 days. After a happy married life of sixty-eight years he left a widow 87 years old.

Mr. White was a lineal descendant in the seventh generation of Peregrim White, the first white child born in New England.

Mr. White came to Florida in 1875 and started an orange grove on Merritt's Island. He was an intellectual man, who made wide researches of many subjects. He made valuable contributions to the horticultural press, and will probably be best remembered by the old timers of this Society for the exhaustive series of articles on the comparative climatology of California and Florida, to the manifest advantage of Florida.

After the opening of this meeting this

committee was informed that Col. S. S. Harvey died in Havana, Cuba, February 25, 1913.

Colonel Harvey was a life member of this Society, and we are sorry information came so late we could get no further particulars of his son. The old members of this Society will remember that Colonel Harvey was located at Molino, near Pensacola, about twenty-five years ago, and had orchards of LeConte pears and other deciduous fruits. About twenty years ago he was associated with the Farmers' Alliance movement, which was of short duration. Colonel Harvey, Senator A. S. Mann and A. H. Manville were associated in a citrus fruit auction in Jacksonville, Florida, which unfortunately was broken up by the 1895 freeze.

After the '95 freeze Colonel Harvey went to Cuba and led an active life till the time of his death.

A picturesque, original and forceful character of large and varied ability, his loss will be regretted by all members of this Society who knew him.

E. S. HUBBARD,
EDGAR A. WRIGHT.

Minutes of Meeting of Executive Committee

The Executive Committee of the Florida State Horticultural Society met in the office of the Secretary on Thursday, February 6th, with the following present:

H. H. Hume,
G. L. Taber,
P. H. Rolfs,
H. B. Stevens,
E. S. Hubbard,
E. O. Painter.

It was moved by Mr. Taber that the President be authorized to invite Prof. F. A. Waugh, of Ithaca, N. Y., for an address at the DeLand meeting, also Mr. David Fairchild of Washington, D. C., and to authorize expenses necessary. Carried.

The Secretary made a report showing that the Society had reached the 1,000 mark; in fact, has 1,003 members on its list.

Moved by Mr. Hubbard that President Hume, Professor Rolfs and Secretary Painter prepare the program for the next meeting.

Moved by Professor Rolfs that the next meeting be held on April 29th if satisfactory rates could be made with the railroads; if not, on the 6th of May. Carried.

Moved that the DeLand committee be named by Mr. H. B. Stevens.

Moved that the meeting commence

Tuesday night, last through Wednesday, Thursday and Friday morning.

Moved that the President be instructed to write to Mr. L. B. Skinner in regard to expenses on his trip to Washington as a representative of the Society.

Moved and seconded by the Executive Committee assembled that the bill of the Audubon Society to have the robins placed on the protected list be heartily endorsed.

On motion of Professor Hume and seconded by Professor Rolfs, the following resolutions were adopted:

RESOLUTIONS RELATING TO THE TARIFF ON ORANGES AND GRAPEFRUIT.

Whereas, the principal fruit industry of Florida is the growing of oranges and grapefruit for American markets, and

Whereas, these fruits are the only crops which can be produced with a chance of profit on many of our soils, and

Whereas, the citrus industry of the State is only now recovering from the set-backs of former years, and

Whereas, the scale of wages commonly paid for labor is from four to six times as great as the scale in force in Southern European countries and the cost of transportation so much less than these fruits can be produced and landed in our

markets at a price ruinous to our crops, and

Whereas, by the use of improved machinery the citrus growers of Florida have effected every possible reduction in the cost of handling citrus fruits, and

Whereas, the removal of the present tariff on oranges and grapefruit would make it impossible to compete in our markets with foreign-grown fruits of the

same kinds, thus resulting in ruin to an industry in which millions are invested, upon which thousands of laborers are dependent, and which forms the basis of numerous manufacturing and other enterprises of our State, therefore be it

Resolved, That we request our Senators and Congressmen to use their every effort to have the present tariff schedule on oranges and grapefruit maintained.

Report of Secretary

E. O. Painter, Secretary.

Last year we all felt confident that the membership of the Society would greatly increase on account of the great attraction offered by the good people of Miami, the "Magic City," and the excursion to Cuba. We were not disappointed, for at the opening of the meeting our regular membership was 478, and during the time of meeting 229 were added, making a total at the close of the meeting of 707. Through the good work of The Grower, of Tampa, Mr. R. L. Goodwin and Miss Gilson and others, our membership was so increased that at the close of the year we had 1,003 members, including life and annual members. Thus the Society has passed the 1,000 mark. We expected much of Miami, and we were not disappointed.

It was thought that the meeting at DeLand would not be so well attended on account of not having any special attractions to induce the members to attend, but great to our surprise we found that DeLand, with no attraction but her own dear self, has been a close second to Miami. The members enrolled prior to the meeting were 427, and during the time of meeting we added 207 more, making a total of 634, to which should be added 16 joining directly after the meet-

ing proper, making a total of 650, or only 57 less than at the close of the Miami meeting. Taking into account the fact that no excursion was booked and no special effort made to get members, this shows a very healthy growth, and one that we can well be proud of. The total attendance at DeLand actually registered was 349 out of a total membership of 634. This shows a pretty fair percentage of attendance, and the Secretary believes is a much larger percentage than any other Society of the kind can boast of.

The question of finances is one that has to be considered, notwithstanding our worthy President was in hopes it would not have to be brought up this year. A larger Society calls for larger expenditures, hence I feel obliged to again resort to asking some of our good members to make contributions to help take care of the current expenses. The good members of the Society have never failed to do this, and I know they will not be found wanting in this instance.

I beg herewith to hand you my report covering receipts and expenditures. The reason I have not remitted to the Treasurer is due to the fact that Treasurer Hart is traveling in Europe, and will not return until some time in June.

FLORIDA STATE HORTICULTURAL SOCIETY

213

Reports sold for years prior to 1912	21	\$ 21.00
Reports sold for year 1912 since meeting	344	344.00
Members for 1913 enrolled to April 28th	427	427.00
Dues for 1914, 1915 and 1916	3	3.00
Life members	5	50.00
Pins sold since meeting	2	2.00

Donations received as follows:—

J. E. Kilgore	25.00
Perrine & Thompson	100.00
H. Harold Hume	10.00
G. L. Taber	25.00
E. S. Hubbard	5.00
A. B. O'Hara	5.00
M. H. Baum	5.00
Mahlon Gore	10.00
Edgar A. Wright	5.00
J. H. Derby	5.00
Herman Merrell	5.00
J. P. Felt	5.00
C. H. Thompson	5.00

\$1,057.00

Dr.

1912—	
June 4, Check to W. S. Hart	\$ 125.00
June 8, H. & W. B. Drew Co., stationery	1.60
June 8, Dixie Seal & Stamp Co.	.46
June 21, Kennedy-Brown-Hall Co., stationery	2.50
June 30, E. O. Painter Printing Co.	.75
July 1, Long distance 'phone message to H. H. Hume	.25
July 1, Long distance 'phone message to P. H. Rolfs	1.20
July 5, E. O. Painter Printing Co.	5.00
July 16, E. O. Painter Printing Co., account postage	114.53
August 13, postage office	5.89
Sept. 30, postage office	5.74

1913—

Jan. 27, Check to W. S. Hart	
March 31, Postage circulars	
March 31, Circular letters	
March 31, Express on printed matter	
April 1, Record Co., circular letters	
April 25, E. O. Painter Printing Co.	23.52
April 23, E. O. Painter Printing Co.	12.00
April 30, E. O. Painter Printing Co., balance on report	65.45
April 30, Postage programs	12.53
April 30, To telegrams	2.46
April 30, To Secretary's salary	100.00
April 30, Returned check L. H. Gibson, '12 Report	1.00

\$ 805.83

\$ 251.17

Dr.

April 30, E. O. Painter Printing Co., stationery	21.94
April 30, H. & W. B. Drew Co.	3.40
	25.34
Office	\$ 225.83

Thanking you all for your help and interest in the Society, I am,

Yours very truly,

E. O. PAINTER,
Secretary.

The following subscriptions were made by members present:

A. H. Brown	\$ 10.00
F. C. Gardner	25.00
L. B. Skinner	100.00

Of this amount, \$80.00 was expended by Mr. Skinner on account of expenses of trip to Washington, re tariff.

R. W. Watkins	25.00
M. F. Robinson	25.00
D. Alford	25.00
Mrs. F. W. Inman	25.00
C. M. Griffing	25.00
Dr. O. W. Sadler	5.00
J. G. Glass	5.00
B. C. Skinner	5.00
G. L. Taber	25.00
E. O. Painter	25.00
G. E. Gillett	25.00
J. W. Perkins	25.00
W. R. Moses	10.00
E. S. Hubbard	10.00
T. R. Robinson	10.00
S. H. Gaitskill	10.00
Mahlon Gore	10.00
W. J. Ellsworth	10.00
Mr. Cornelius Christianey	25.00
Mr. A. F. Wyman	10.00
F. G. Sampson	10.00

In addition to the report given above, the following has been received up to this time:

Life members	1	\$10.00
Pins sold	24	24.00
Memberships paid at meeting		206.00
Donations paid		35.00

\$275.00

Dr.

Paid to H. Harold Hume for expense of F. A. Waugh \$130.00

\$145.00

Total on hand to turn over to Treasurer W. S. Hart \$370.83

Report of the Auditing Committee

"We have examined the accounts, and state they have examined the books and found them correct." vouchers, and found them correct.

A. B. O'Hara,
W. W. Yothers,
E. N. Reasoner.

Mr. Hume: The Auditing Committee

Mr. Rolfs: I move we accept the report of the committee, and that the committee be discharged.

Motion seconded and carried.

Resolutions

Crop Pest Bill Committee.

Mr. Hume: In the discussion yesterday, a resolution was passed requesting the President and two other members of the Society, to be appointed by him, to go to Tallahassee. I have considered this carefully, and I will ask two gentlemen to accompany me to Tallahassee on Monday morning, to be there Monday afternoon. Those two are Mr. Gaitskill and Mr. Skinner. I have made these appointments, as I say, after careful consideration and after canvassing the situation thoroughly, and have come to the conclusion that those two men can do more than any other two men I could appoint.

The nurserymen who are in attendance at this meeting held a meeting last night, and at that meeting they donated \$100 to the Horticultural Society to be used in handling this matter; that is, they have given to the Society a fund of \$100 to be used in carrying on this work.

In addition to that, they appointed a member of the Nurserymen's Association, Mr. C. F. Barber, to assist in this work, and the nurserymen will pay his expenses.

Experiment Station Extension Work.

The following resolution was introduced by Rev. J. G. Glass, and on mo-

tion referred to the Legislative Committee:

Resolved, That the Horticultural Society petition the Legislature of this State to appropriate \$15,000 towards the extension of the experiment work conducted at the Gainesville station.

Mr. Yother's Investigations Abroad.

The following resolutions introduced by Dr. E. W. Berger, were unanimously adopted:

Whereas, Mr. W. W. Yothers, Field Agent, Bureau of Entomology, stationed at Orlando, Florida, contemplates taking a trip abroad for the purpose of studying insects attacking citrus trees in Spain, Sicily, Italy and other countries; and

Whereas, such a trip of investigation and observation will be of great value to the citrus industry of the United States, be it

Resolved, That it is the sentiment of this Society that the United States Department of Agriculture defray all the expenses of said trip. Be it further

Resolved, That a copy of these resolutions be forwarded to Hon. David F. Houston, Secretary of Agriculture, Dr. L. O. Howard, Chief Bureau Entomology, and to Mr. C. L. Marlatt, Assistant Chief Bureau of Entomology.

Second Resolution on Crop Pest Bill.

The following report of the Committee on Legislation was introduced and unanimously adopted:

DeLand, Fla., April 30, 1913.

Your Committee on Legislation would beg to report that they have had before them and given due and proper consideration to Senate Bill No. 218, known as the "Crop Pest Bill," introduced by Senator Drane. We would beg to say that we consider this bill one of the most important ever brought before the convention, and it should have the unanimous support of this State Horticultural Society.

Chairman,
M. E. Gillett,
E. O. Painter,
Isaac A. Stewart,
G. L. Taber,
O. W. Conner,
Committee on Legislation.

THE PRESIDENT'S ADDRESS.

The committee to whom the President's annual address was referred submitted the following report, which was unanimously accepted:

To the Florida State Horticultural Society:

Your committee to whom was referred the President's annual address, having carefully considered the same, beg to submit the following preamble and resolutions:

To the Legislature, State of Florida, and National Congress:

Whereas, It is evident to the members of the Society that there is great danger of the introduction into the State of the Med. Fruit Fly, Spanish Red Scale, Mexican Orange Maggot and similar pests which attack both citrus and deciduous fruits and many of our vegetables and agricultural products as enumerated in the most impressive and interesting annual address of our President; therefore be it

Resolved, That the Florida State Horticultural Society, assembled in annual session, order said address printed and copies supplied to the members of the State Legislature now assembled at Tallahassee, accompanied by copies of these resolutions. And be it further resolved that the Society hereby (unanimously) endorse the provisions of the Crop Pest Bill, now pending before the Legislature, known as Senate Bill No. 218, as affording necessary measures for the exclusion of these pests and safeguarding the horticultural and agricultural interests of the State.

We do, therefore, respectfully request the support of every member of the Legislature for said Senate Bill No. 218.

C. M. Griffing,
G. M. Wakerlin,
T. R. Robinson,
Committee.

Report of Committee on Final Resolutions

Your committee recognize the fact that final resolutions are, to a greater or less extent, formal resolutions, and adopted by a body of this character as a final bow to its hosts and a courteous "goodbye."

But your committee wish to make it clear to our hosts, as well as to the Society, that we should fall far short of our own purposes and intentions, if we fail to impress the Society with the thought that our hosts and this city of DeLand, as well as all contributing factors in our success, are deserving and should be accorded more than a mere formal set of resolutions. In the first place, no stranger first entering this gem of a city could possibly fail to be impressed with its natural and artificial beauty, its exceptional cleanliness, its handsome avenues, well laid streets, its lovely and attractive homes. Evidently some one possessed of civic pride is constantly and persistently at work, and DeLand can well be held up to other and older, as well as younger towns and cities, as a model of up-to-date progressiveness, and manifest municipal activity, not surpassed by any city in the State. It has been a pleasure and a privilege to have been here in this midst, and to have shared and enjoyed the bountiful hospitality of its citizens, and its public institutions; therefore be it

Resolved, By the Florida State Horticultural Society, that we beg to extend to the citizens of DeLand, to its hotels and public institutions, to the Business

Men's League, to the Civic League, to the press in this city, and to the most courteous and efficient local Committee of Arrangements and Reception, Messrs. A. E. Douglass, John P. Cairns, H. B. Stevens, Samuel Jordan, Dr. Voorhis and Mr. C. O. Codrington, editor of the News, our sincere appreciation of their many kindnesses and courtesies which have contributed so largely to the success of this meeting. Especially do we wish to extend to the president and faculty, and to the student body of Stetson University, the thanks of this body for their cordial reception and for the excellent and most enjoyable entertainment afforded by them on the evening of Wednesday, the 30th.

But there have been other contributory causes to the success of this meeting. Amongst these, your committee mention the efficient, constant and faithful services of our executive officers, Prof. H. Harold Hume, Mr. E. O. Painter, and Mr. W. S. Hart.

With a live, enthusiastic and devoted executive force, a society such as this may hope for and achieve success; without such an executive, the society would be doomed to failure. Be it therefore

Resolved, That the thanks of this Society are hereby extended to its efficient, faithful and competent President, Secretary and Treasurer.

Beyond these agencies of helpful achievement, this Society owes to itself, and to those immediately concerned, some

definite expression of appreciation to the force at work at the Experimental Station in Gainesville, and at the sub-stations of the United States Department of Agriculture at other points in this State.

There is no agency at work in Florida today more or better calculated to facilitate and expedite the work of this Society than the work done by these centers of activity. The force at work there is always courteously and promptly preferring its services to any and all who desire its services and wish to profit by its labors and its investigations. Therefore be it

Resolved, That this Society wishes to give expression to its sense of appreciation of the valuable services rendered by the director and his assistants in the Experimental Station in Gainesville, and to the corps of workers in the sub-stations of the United States Department of Agriculture at Orlando, Miami, Brooksville and Orange City.

While your committee does not think it wise or expedient to single out individuals in this State whom the Society should honor by special mention, when so many are doing splendid service in its development, yet we feel that circumstances justify a departure from this rule, and that the Society should extend to Mr. Wm. Chase Temple an expression of its sense of the obligation under which he has placed this Society, by his able and unselfish management of one of Florida's most important organizations for the past three years. Therefore be it

Resolved, That the Society wishes to place on record and to extend to Mr. W. C. Temple an expression of its debt of gratitude for the splendid work he has

done and the results he has achieved in the settlement of some of the most important questions that face the industrial development of our State.

Resolved, That the Secretary of this Society be instructed to transmit to Mr. Temple a copy of the foregoing resolution.

All of which is respectfully submitted.

JAS. G. GLASS,
Chairman,
E. W. BERGER,
W. R. MOSES.

(Seconded and carried.)

Professor Rolfs: Our Committee on Final Resolutions, inadvertently left off something that I am sure they overlooked, and I would like to introduce a resolution to cover it, now:

Resolved, That we extend a vote of thanks to the DeLand Band for the music furnished to the Horticultural Society. This music has added much to the pleasure of the meeting.

Resolved, That we extend a vote of thanks to the orchestra of the opera house for music furnished to the Horticultural Society. The thoughtfulness of the band and orchestra is very much appreciated."

I move to pass this resolution.

Mr. Moses: I second it. Cannot it be incorporated in the original resolution? I offer that as an amendment to the motion.

Mr. Hume: Can we not suspend strict parliamentary rules and vote on the motion and the amendment at the same time?

(Motion and amendment carried.)

Discussion on Next Place of Meeting.

Mr. Hume: One of the pleasant things in connection with our meetings, is that the people are always glad to see us come to their towns and sorry when we go. Not twice glad, I hope. Down at Miami I think they wanted to keep the whole crowd there all the time.

We are going to take up now the next topic on the program. That is, the selection of the next place of meeting. In addition to the discussion on this topic, it will be necessary for the Secretary to read the duly accredited invitations.

Mr. Painter;

*"Prof. P. H. Rolfs,
President of the State Horticultural
Society.*

Dear Sir: In behalf of the officers and members of the organizations of this city, I cordially invite your Society to hold its next Convention in Gainesville. At the meeting of the Board of Trade last night I was authorized to write you this letter and urge your acceptance.

Yours very truly,
Mayor."

Mr. Hume: The matter is open for discussion. May we not limit these discussions.

Prof. Rolfs: I move that the discussions be limited to five minutes for the principal discussion, and the subsi-

diary discussions be limited to three minutes.

(Motion seconded and carried.)

Mr. Hamm: I cannot possibly tell you all about Palatka in five minutes, (laughter) but I will try to tell you a few things. There are three principal points we wish to bring up before you in regard to the selection of the next place of meeting. That is the location of the town, its accommodations for you and the entertainment it can give you. All these are essential to your having a good meeting and a big meeting. You want to have a town that you may be able to get there easily with the least expense. After you get there, you want to be sure that you have ample accommodations that are first-class, so that you may be comfortable. And you want to have some side trips, so that you will forget you ever went to any other place, and you will forget everything else if you will only come to Palatka. (Laughter.)

Palatka can offer you all those things, better than any other point I know of. We have the location, ample accommodations, and can give you the best possible entertainment.

Mr. Skinner: Are the girls up there as good looking as the boys? (Laughter.)

Mr. Hamm: We are located, as you know, on four principal railroads of the State, and I am sure you will have so

many new members it will be a larger meeting than this one here. Our principal hotel alone will accommodate more people than are present here at DeLand, and there are four other hotels that have accommodations for as many more. We can take care of probably 1,000 people at our principal hotel, and as many more at the other hotels, which are all within two blocks, so that you people will all be close together, and I know that is one of the most important features at a meeting of this kind.

Then there are our three convention halls, which are located within one block of these hotels, or not much more. If there is bad weather (which, of course, is rare in Palatka) you will not have far to go to attend the meetings.

We have planned a great many things we want you to do; we want to take you to Crescent City, up the St. Johns River, through Deep Creek, across Crescent Lake, and give you an all-day picnic outing on the river. If you are so busy you cannot stay with us a week, or two weeks, you might arrange to hold one of your sessions on the boat. That was done recently by one of the newspaper men's conventions.

Then we want to take you to the Hastings potato section, about eight miles from Palatka. Potatoes are grown all the way from Hastings to Palatka, and you will see them growing, or, rather, digging potatoes at this time of the year.

Besides, we want you to see that we have more streets paved with brick than any place in the United States the size of Palatka. We have all brick streets

there, nothing else. We have not a single street paved with anything but brick, and you do not get your shoes all dusty.

We have a Woman's Club there and they have fixed up some of the parks in the city.

I could speak of many other things; I could take until 6 o'clock telling you everything we are going to do for you. The Mayor, the Board of Trade, and everybody, extend to you a hearty invitation to come to us next year at Palatka.

I would like to make the motion that Palatka be selected as the next place of meeting for the Florida Horticultural Society. (Applause.)

Mr. Ledbetter: I wish to second the motion of Mr. Hamm in selecting Palatka as the next place of meeting. We believe we have more advantages to offer you than any other city in the State. As you know, Crescent City is a famous fruit producing and shipping section; the second largest in the State.

In addition to what he has already stated to you, it has been stated at this meeting that 90,000 barrels of Irish potatoes were shipped last season from the Hastings section. It will be 240,000 barrels of potatoes shipped this year.

Then there is the camphor farm, which is near Palatka; 10,000 acres set out in camphor trees. It will prove valuable to you to be shown what different crops all these different lands will produce.

We request and urge that you will give Palatka your favorable consideration in passing on where you will hold your next convention.

Mr. Jones: I object to the consid-

eration of the motion which has just been made. We want to tell you about Arcadia, and you should place both of them side by side before you consider. When you do consider, we know you will decide for Arcadia. (Laughter.)

Mr. Ley: It gives me great pleasure to stand before you and extend a cordial invitation to this distinguished body of ladies and gentlemen to hold the next meeting of your Society at a town whose name I shall presently mention.

I have been, as other members of this body have been, appointed by representative organizations or bodies of our town; that is to say, the Board of Trade, and Chamber of Commerce, the Farmers' Union, the Civic League, the City Council and the people in general. We have not only extended invitations to you in writing, but each one of these bodies has sent one to represent them. We are here to name as the place for holding the next meeting, Arcadia. (Applause.)

I wish to state, sir, that in representing this town, I represent the town that is mentioned as the Golden Gate of South Florida. I haven't anything to say against Palatka; it is a magnificent city. I am surprised they did not speak of Palatka as the aristocracy of the world borne on the magnificent bosom of the glorious St. Johns River. (Laughter.)

However, Arcadia is the logical point for your next meeting. The Society recently met at Gainesville; it is being held now at DeLand. It has never been held in Arcadia, or even in that section of our beautiful State.

It was said by the gentleman who

spoke before me, that Crescent City is the next to the largest orange shipping point in the State. The largest, however, is Arcadia.

The gentleman spoke of the rainy weather we are apt to meet with in Palatka; down in beautiful Arcadia, the only clouds in our skies are the white wings of the herons floating overhead; it is always sunshine there. (Laughter.)

It is really, sir, the center of the citrus industry of the State. You will see there the finest groves that are to be found in this State, and we are told there will be placed at our disposal the trains of the C. H. & N. We have two magnificent lines ourselves, and will have another when you meet there, and Mr. McCall, who is General Passenger Agent and member of the Board of Trade, has promised to take us to our deep-water suburb, Boca Grand; there we can have a session, if we desire it.

As a closing word, sir, the Board of Trade requests me to say that they will have autos "on tap" there; we have about sixty and, if necessary, we will have still more, to take all the members on a one-day trip. In all probability we will have 120 automobiles by that time. We will take all of the members of this distinguished body all through the beautiful orange grove section and show you what DeSoto County can do when it tries, and you will be surprised.

Mr. Wakelin: I would like to ask, if the Society decides to go to Arcadia for the next meeting, if the gentleman will guarantee that the subject of green fruit will not be mentioned. (Laughter.)

Mr. Jones: I rise to emphasize the invitation that has been made by our representative from Arcadia. Before I came here, I thought that Palatka and Arcadia were a long distance apart, but since I listened to the speeches of the gentlemen from Palatka, I have come to the conclusion that Arcadia must be a suburb of Palatka. But this one time, the tail is going to be heavier than the kite, and the kite is not going to fly very high.

I represent, not only the city bodies, but the farmers, and, in fact, the entire people in that section.

Yes, we should have a place where you can be entertained royally, as the Palatka representative said, and we have that place in Arcadia. We could entertain a convention twice the size of this with the greatest ease. We offer you everything that has been offered to you by others, and more, too.

But inasmuch as I have only three minutes, I am not going to try to tell you all we will do for you. Not only do we have orange groves, but we have phosphate plants, we have cattle ranges, we have all the industries that will interest all branches of the subjects we take up, and we expect to show them all to you in addition to the special lines that you go there for.

The argument that we should go to Palatka because it is a central point, I do not deem a good one, for the reason that we are not seeking the central point. If we were seeking a central point, we would choose Orlando, or some nearby place, and let it stay there permanently.

The fact that Palatka has asked for

it so many times is no argument. If that was an argument that would insure success, W. J. Bryan would have been President of these United States many, many years ago. (Laughter and applause.)

I have heard the criticism that we cannot accommodate you. We can; we have ample room to take care of this convention, or we would not have presented the invitation. I offer \$100.00 for the man who can prove that we cannot take care of a convention twice this size.

Our friends from Palatka have been handing around knives for souvenirs, probably with the intention of making interest for Palatka more keen, but I am afraid they are going to cut off their opportunities for success. (Laughter.)

I extend to you a hearty invitation from every one of the interests I have mentioned, and I am sure that you will agree with me that Arcadia, the largest orange shipping point in the State of Florida, is the next logical place of meeting.

Mr. Carlton: I would like to add a word, too. I am here representing Arcadia; we want you next year, and we expect to have you. We have every facility for entertaining the convention. My sympathy and my interest is with Palatka, I think, from an educational standpoint; they would be benefited for the reason that after they have gone to Arcadia and seen what is there they can go back to Palatka and say, "the half has never been told." If the gentlemen from that little town situated on the St. Johns River, go to Arcadia and see how we do things, they will go back with new ideas

and tell how we are growing like the green bay tree, and if they only apply our ideas to their own little town, maybe they will amount to something after awhile. (Laughter.) Palatka has had over fifty years in which to grow, and it is still a hamlet as compared with Arcadia.

I see no reason why you should not give us the opportunity of entertaining you in Arcadia. We know how to do this, and there are two thousand people in the city of Arcadia to make it pleasant for you. We shall give you the best entertainment you ever had, and the finest excursion. Do not hesitate about going to Arcadia. I think Palatka should go around and see a little more of the world, and not get into an old rut. If you mix and mingle with the right class of people—it will do you good, and we in Arcadia are the right class of people.

I admire the ambition of the young man who spoke to us. That young man has a bright future ahead of him, and if there are many like him in the town of Palatka, she will wake up from her long sleep and come to the front and eventually fall into the line of progress.

We ask you to favor Arcadia with your next place of meeting.

Mr. Lynch: I have been much entertained by the gentlemen from Palatka and Arcadia. I expect I shall be the only one to present the name of Gainesville, and I want to make a speech that will equal in length the composite speeches made by the gentlemen ahead of me.

One of the gentlemen made the illustration that Palatka was the kite and Ar-

cadia was the tail. Now Gainesville comes forth, and she is what holds the string and sails the kite and the tail, too. (Laughter and applause.)

It seems that the gentlemen are engaged in a controversy of a somewhat personal character. It seems that the educational facts have been brought into the question here, and we are going to sit on the jury and decide of the educational advantages of the two towns. Now, since Arcadia has been told by Palatka, and Palatka has been told by Arcadia, that each should come to the other's town in order to become better citizens, better Christians and better horticulturists, what do you think about coming to Gainesville for your educational advantages? It is the educational center of the State of Florida, and so recognized by the Department of Agriculture.

Now, I don't know whether this is true or not, but some one came to me and told me, so I will tell you. On the streets of DeLand, a citizen of Arcadia met a citizen of Palatka, and after they talked awhile, said to him, "If you were not a citizen of Palatka, what would you like to be?" And the citizen of Palatka answered, "I would like to be a citizen of Arcadia." And he of Palatka said to him of Arcadia, "If you were not a citizen of Arcadia, what would you like to be?" And the man of Arcadia said, "I would like to be a citizen of Palatka." About this time a citizen of Gainesville walked up (I am not sure it was Professor Rolfs, though it may have been) and they asked him, "If you were not a citizen of Gainesville what would you be?"

And he answered, "Why, I would be ashamed of myself." (Laughter.)

Over in Gainesville we have people who have warm hearts, people who are noted for their hospitality and cordiality, and they want you to come. They have the latch string outside the door for you any time you come, and you will get a genuine welcome from them.

We have the University of the State of Florida there, and on the campus of that University, there is an Experiment Station. That Experiment Station does not belong to Florida; it is the property of the people of Florida, *you*; and as I understand it, you are here for the purpose of discussing problems that the Experiment Station is working on; problems of plant life and citrus life. You are meeting together with the purpose of furthering the cause of horticulture of the State of Florida, not for the purpose of having social meetings and entertainments. In Gainesville, there is the laboratory, and we will have it so that when you are discussing problems you may have the concrete experiments right before you as they are going on from year to year, to assist you in the work you are doing.

I want to say this in conclusion. I heard two citizens of this State, one from Arcadia and one from Palatka, discussing different things, and the one from Palatka had this to say, "Last night I had a dream, and I dreamt I died, and they admitted me to Heaven." The gentleman from Arcadia looked dubious at this, but said nothing. "I was walking down the golden streets, and I was as happy as

I could be. I met lots of people from Palatka, lots of them, and they were all happy as could be. And there were a few people from Arcadia there, and they were walking around, singing and happy.

"Finally, over on a hill, I saw a company of men, and they had chains with a ball fastened to the chain, and I said, 'Who are those people?' 'Those people are from Gainesville.' 'Why in the world have you got a chain and ball on the people from Gainesville, and you allow the other people here to go without?' 'My friend, if we took the chain and ball from those people, they would shoot right back to Gainesville.'" (Laughter and applause.)

Come to Gainesville and you will understand why they wanted to go back in that direction.

Mr. Prouty: If you go to Arcadia, I will put up a bond that I will not make a speech. (Laughter and applause.)

Mr. Hume: If we do go there, we will have the bond, Mr. Prouty.

Mr. Ernst: If you come to Palatka, we will give you a daylight ride to St. Augustine.

Mr. Jones: I move that the next place of meeting be selected as Arcadia.

Mr. Lynch: I move as a substitute that the next place of meeting be at Gainesville.

Mr. _____: I move that the nominations be closed.

Mr. Hume: As there are no further nominations, we will now vote by ballot.

Mr. Glass: I think the only fair way

is the plurality vote. If fifty voted for Palatka, and fifty for Arcadia, and fifty-five for Gainesville, then Gainesville would be decided upon by a vote of fifty-five out of one hundred and fifty-five. I think the place should be decided upon by the majority of those entitled to vote.

Mr. Hume: I can take no steps to comply with your suggestion, unless you put that as a motion.

Mr. Glass: Well, I put it as a motion, then. I think it's fair.

Mr. Thompson: I second that motion.
(Motion carried.)

SELECTION OF NEXT PLACE OF MEETING.

Arcadia	-----	75
Gainesville	-----	30
Palatka	-----	III

Mr. Ley: I move we make the vote for Palatka unanimous, and all be there when the roll is called.

(Motion seconded and carried.)

Mr. Skinner: I want to move the thanks of the Society be extended to the cities of Arcadia and Gainesville for the warm invitations to go there.

(Motion seconded and carried.)

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