attack the buds or burrow into the seed-pods. Seedling plants of tobacco, like many other crops, are liable to attack by “ cut worms,” the caterpillars of species of *Peridromia* and *Agrotis.* “ Plant bugs,” which suck the juice of the leaves, have been recorded as serious enemies in some parts of the world. Recently, shade-grown tobacco in some localities has suffered considerably from the attacks of small sucking insects known as thrips, which produce ” white veins ” in the leaf. White vein may also be induced by other causes besides the attacks of thrips.

Stored tobacco is liable to be attacked and ruined by the “ ciga­rette beetle,” a cosmopolitan insect of very varied tastes, feeding not only on dried tobacco of all kinds, including snuff, but also on rhubarb, cayenne pepper, tumeric, ginger, figs and herbarium specimens. Other beetles, such as the rice weevil *(Calandra oryza),* also attack dried tobacco.

The fungoid diseases of tobacco are comparatively unimportant; there are, however, some diseases of obscure origin which at times cause considerable damage. "Mosaic disease ” is the name given to a condition in which the leaves are more or less sharply differenti­ated into light and dark green patches. The matter has been fully investigated by Mr A. F. Woods (Bulletin No. 18, Bureau of Plant Industry, U.S. Department of Agriculture), who attributes it not to any specific parasite but to a disturbance of the normal physiological activity of the cells.

"Frog’s eye,” or “ leaf spot,” denotes the occurrence of small white specks on the leaf. This disease is probably bacterial in origin. Wind and hail may break plants or damage leaves, especially if required for wrapper purposes. The provision of wind breaks is the only effective remedy.

Diseases which occur in curing are important. Excessive humidity causes small dark spots to appear; these become confluent and the whole leaf may become dark and decay. Various names are given, such as ” pole burn,” “ pole sweat,” “ house burn.” The disease is checked by raising the temperature above 110° F., and reducing the humidity of the barn.· Stem rot, due to a mould *(Botrytis* sp.), occurs in wet weather. Too rapid drying of the outer tissue of the leaf leads to the formation of “ white veins,” which injure leaves required for wrapper purposes, otherwise it is not important. Another defect arising during curing and fermentation is the efflorescence of salts on the surface, a phenomenon known as "saltpetre ”; light brushing and spraying with a weak solution of acetic acid are effective remedies.

*Improvement by Selection.—*Careful examination of a large number of individuals of one variety growing under similar conditions reveals differences in such characters as number of leaves per plant, the size and shape of the leaves, tendency to form suckers, time of maturing and resistance to disease. Other tests show variability in burning quality, elasticity of leaf, texture, taste, &c. The United States Department of Agriculture has closely investigated this important question and the results attained are brought together by Messrs H. D. Shamel and W. W. Cobey in *Tobacco Breeding* (Bulletin 96, Bureau of Plant Industry, 1907). No crop, it is pointed out, responds so readily to breeding as tobacco, or deteriorates more rapidly, as regards both yield and quality, if neglected. The variations are classified as: (1) Variation in type due to crossing, change of soil and climate, especially, for example, when seed from the tropics is introduced to temperate regions. (2) Variations within the type, due to natural tendency to vary, local conditions and maturity of seed. When Cuban tobaccos were first introduced into Florida, the type broke up, but by carefully selecting the best plants and using them only as sources of seed for later crops, a good type was obtained. The tobacco flower is fortunately perfectly self-fertile, and by enclosing the. flowers of selected plants in paper bags, so as to exclude all possibility of hybridization, progeny true to the type of the mother plant can be obtained.

No attempt should ever be made to raise large crops of tobacco from imported seed, but only a small crop, and the seed of the selected plants should be used for future propagation. In selection work the grower must keep definitely in view the special market requirements for the kinds of tobacco he is producing. Thus for wrapper tobaccos, amongst other points a broad, rounded leaf, which will yield perhaps eight wrappers, is much more valuable than a narrow pointed leaf which yields perhaps only four. Plants may be found growing side by side, the one with broad leaves, the other with narrow, but by selection the broad type can be perpetu­ated and gradually improved.

Hybridization can also .be readily controlled in the case of tobaccos, and in this connexion it is useful to note that, if pollen is desired of some variety growing at a distance, it will retain its vitality for several weeks if kept perfectly dry, and so can readily be sent by post from one place to another. Another favourable feature is the fact that a single capsule contains from 4000 to 8000 seeds, and one tobacco plant may easily produce from 500,000 to 1,000,000 seeds.

*Production.*

*United States.*—Tobacco cultivation dates in the States from the very early years of the 17th century, when it was taken up in Virginia. A general description has already been given of the methods of cultivation and preparation. In 1906 the total area under tobacco in twenty-five states was 796,099 acres, and the production 682,428,530 lb, valued at about £13,500,000. The principal tobacco-producing states, with the approximate value of their crops, were: Kentucky, £3,885,400; Ohio, £1,706,600; North Carolina, £1,396,153; Wisconsin, £1,342,600; Virginia, £1,206,309, Pennsylvania, £979,550; Connecticut, £883,184; Tennessee, £511,035 ; . Florida, £330,750; New York, £244,053, and Maryland, £241,046. The average yield per acre in the States as a whole in 1906 was 857∙2 lb. New Hampshire had the highest average, 1785 lb per acre, and Mississippi the lowest, 440 lb.

The successful production of cigar tobaccos from Cuban and Sumatran seed was a development of the late 19th century.

Perique tobacco is worthy of special notice. This famous tobacco is produced only at Grand Points in Louisiana. Great care is given to the cultivation, and damp atmospheric conditions are desirable during the ripening stages. The leaves, when stripped from the stalks, are made into rolls and subjected to great pressure, which is released daily to allow the leaves to absorb their expressed juice. To the chemical changes, mainly oxidation, which go on in this juice while it is exposed to the air, the characteristic aroma and flavour of Perique tobacco are mainly due.

*Cuba.*—Tobacco is the second industry of the country, the value of the crop being surpassed only by that of sugar. The cultivation was formerly a monopoly of the Spanish crown, but from 1817 payment of a tax, usually heavy, has been the only restriction. The superiority of Cuban tobaccos in flavour and aroma, especi­ally for cigar fillers, has long been recognized, but exactly to what conditions these qualities are due is not fully known. The leaf known as “ Vuelta Abajo,” produced in the province of Pinar del Rio, is perhaps the best cigar leaf of the world. The other tobacco-producing provinces in order of importance are Havana, Santa Clara and Santiago de Cuba. The crop is mostly grown in the open, air-cured and carefully fermented. Cuban tobacco is. grown as a “ winter.” crop, the summer months being those of high rainfall. Cultivation under shade was recently tried with satisfactory results; "166∙65 acres cultivated under cheesecloth produced in 1903 10 bales of wrappers and 1∙5 bales of fillers of tobacco per acre, the output under the old system having been 4∙5 bales of tobacco per acre of which only 10% represented wrappers of good colour ” (Diplomatic and Consular Report on Cuba, 1904, No. 3522).

*Mexico* is an important tobacco-producing country, and Mexican leaf is largely used in Europe for cigar wrappers and other purposes. Mexican tobacco approximates more or less closely to that of Cuba, and is cultivated and prepared in very similar ways.

*France.—*Tobacco cultivation is an important industry, and the home production is carried out under government supervision. In 1905, 53,750 planters cultivated 39,439 acres, and the total crop amounted to 61,614,900 lb, of the approximate value of £2,000,000. The variety grown is usually of the Virginia type, and the leaf is coarse, dark and heavy, and suited to the manufacture of plug and snuff.

*Germany.*—The chief tobacco-producing divisions are Baden and Alsace. The leaf is of medium size, heavy, and is mainly used in the manufacture of cigars.

*Hungary* produces tobacco of a rich, dark brown colour, useful for cigars, and also a small, bright yellow leaf, of value as a cigarette and pipe tobacco.

*Russia.—*In northern Russia the produce is mainly a large, coarse, heavy, dark leaf, of use only for the manufacture of plug and snuff. In southern and Asiatic Russia good tobacco of the Turkish type is produced.

*Italy* produces two principal types, a dark, heavy Virginian tobacco on the heavy soils of northern Italy, and a Turkish type tobacco on the sandy soils of the southern part of the country.

*Syria.—*The distinctive Latakia tobacco is. produced in the province of Saida in northern Syria. The leaf is subjected to the smoke produced by burning in the green condition leafy branches of species of evergreen oaks *(Quereus* spp.). The process of fumigation lasts from seven to nine months, and during it the tobacco acquires its black colour and peculiar flavour.

*Greece* .—Grecian tobacco is grown from Turkish seed and closely resembles Turkish tobacco in character and uses. Egyptian cigarettes are to a great extent made from Grecian tobacco. Paper is a monopoly in Greece, and Grecian cigarette manufacturers, to escape the monopoly, have transferred their business to Egypt, where they make cigarettes from Grecian tobaccos by the aid of Greek workmen.

*Turkey.*—Tobacco is an important crop in Turkey, where its cultivation and manufacture are monopolies. The ordinary tobacco and cigarette trade is controlled by the Regie. Compagnie intéressée des tabacs de l'empire Ottoman, and Narquileh tobacco (called "tumbeki ” and used in “ hubble-bubbles ”) is in the hands of a similar organization. The small Turkish leaf is famous through­out the world. Some of the finest flavoured tobaccos are produced in the regions around Cavalla in Macedonia and ancient Ephesus in Asia Minor. The cultivation of Turkish tobaccos has been taken up in various parts of the world, *e.g.* South Africa, and to maintain the standard of the produce fresh supplies of seed were obtained annually from Turkey. To guard against this competition, the export of tobacco seed from Turkey was prohibited in 1907. The