scopic counts of the numbers of yeasts and oidia per cubic centimeter of the mixed cream going into the churn. In contrast to these figures microscopic counts were made from the whey extruded from melted samples of the resulting butter. Very few of the cream samples examined showed yeasts in excess of 5000 per cubic centimeter, and in no case did the figures exceed 75,000 per cubic centimeter. By the microscopic method used no oidia were found since the number must exceed 5000 to be counted. Cultures showed, however, yeasts and oidia to be present in small numbers. Counts made from the butter showed the numbers of yeasts and oidia to be consistently less than 5000 per cubic centimeter when freshly made. Careful experiments in shipping these butters and storing them under refrigerator temperatures showed that yeasts multiply readily in moderately salted butter whenever the temperatures of transportation or storage permit, whereas oidia were restrained from growing by the salt present. The count of oidia, therefore, in such butter is attributable to the cream and more or less indicative of the condition of that cream before manufacture. The small numbers of yeasts and oidia found in these high-grade creamery butter samples scoring 93 or over are in sharp contrast to the numbers found by Redfield in a large series of butter and cream samples in a centralizer creamery whose output regularly scored 88 and 89.

Alaska Once Subtropical. (*U. S. Geological Survey Press Bulletin, No. 481.*)—The ancient vegetation of the Arctic region, as is shown by a study of its fossil plants, indicates that its climate was once very unlike that which prevails there now. Instead of consisting of a handful of small plants struggling for life amid snow and ice in a scant, almost perpetually frozen soil, its vegetation was abundant and luxuriant and included ferns and palm-like plants that grow only in a mild and probably frostless climate. This vegetation flourished in the Arctic region from at least late Paleozoic to middle Cenozoic geologic time, millions of years ago, before man existed. Although these lands are now so inhospitable and are rarely visited, the Geological Survey has gathered a large amount of information concerning their fossil floras.

A study of the coal beds of the Cape Lisburne region has incidentally disclosed many fossil plants. These coal beds are extensive and are the only known commercially valuable mineral resources of that region. A little coal is occasionally mined for vessels that are short of fuel, which, as there is no harbor, lie offshore and perilously load on a few sacks of coal by means of lighters.

Cape Lisburne is the bold headland which marks the northwest end of a land mass that projects into the Arctic Ocean from the western coast of Alaska about 160 miles north of the Arctic Circle and about 300 miles directly north of Nome. Even Cape Lisburne is by no means the northern limit of the fossil plants of this nearly tropical vegetation, for they have been found in the rocks 180 miles northeast of Cape Lisburne.

Antirachitic Vitamine.—Results obtained in a study of experimental rickets in rats, made by E. V. McCOLLUM, NINA SIMMONDS, P. G. SHIPLEY and E. A. PARK, of Johns Hopkins University (*Jour. Biol. Chem.*, 1922, 1, 5-30), support the view that cod liver oil contains an antirachitic vitamine as well as fat-soluble A. The fat-soluble A vitamine promotes growth and prevents the occurrence of xerophthalmia (an eye disease), while the antirachitic vitamine prevents the occurrence of rickets. McCollum and his associates find that "cod liver oil contains in abundance some substance which is present in butter fat in but very slight amounts, and which exerts a directive influence on the bone development and enables animals to develop with an inadequate supply of calcium much better than they could otherwise do."

J. S. H.

Precautions in the Use of Nessler Solution.—Nessler solution is an aqueous solution of potassium mercuric iodide rendered alkaline by addition of the hydroxide of a fixed alkali. It reacts with solutions of ammonium salts to yield a yellow solution containing dimercuric ammonium iodide. Extensive use is made of this reaction in analytic chemistry for the quantitative determination of ammonia colorimetrically. At times a cloud or precipitate may also form and interfere with the determination. According to CLARENCE E. MAY and HARRY P. ROSS, of Indiana University (*Jour. Am. Chem. Soc.*, 1921, xliii, 2574-2575), this phenomenon may be avoided by taking certain precautions. Only distilled water may be used for dilutions; tap water, which has been rendered ammonia-free, is unsatisfactory. Prior to use, the glass vessels, in which the reaction is carried out, should be washed with chemically pure nitric acid, then with water in order to remove the mercury film from a previous determination. Not over 1.0 milligram of ammoniacal nitrogen should be present in 150 c.c. of solution. The proper volume of Nessler solution should be added rapidly and at one time, never in several successive portions. An intimate mixing of the solutions occurs instantaneously without agitation. In fact, stirring and shaking must be avoided. Twenty minutes after addition of the reagent, water may be added gently to dilute to any desired volume.

J. S. H.