

The French government established a colony at Obok, and thence quite recently moved it to Jibouti, which a few years ago was a mere stretch of desert coast, but which, by the lavish expenditure of money, has now become an important town. It still grows, money is still forthcoming, and Jibouti looks to the future for its return.

Zaila has for numberless years been the point of departure for caravans for Abyssinia. It occupies the same position as before. No caravans ever started from the site whereon the new town of Jibouti now stands. In Zaila the British government has done nothing beyond watch over the caravan route and insure peaceful passage for all who use it. The old order of things continues under circumstances of improved security and a protection on which it is safe to rely. Eastern methods of transportation endure, but the British government protects it.

Jibouti, on the other hand, is a port newly established for the development of western improvements. Modern enterprise has subscribed capital to construct a railroad from the coast and secure the trade with Abyssinia. The enterprise is sound, but, like all undertakings in unknown countries, it has met with difficulties and delay. The country through which the line had to be made was waterless and studded with rocks. Want of funds frequently interrupted the progress of construction. Hostility on the part of the fierce Somali tribes, who gave no welcome to a substitute for the transport provided by the hire of their camels, was, perhaps, as great a source of trouble and loss as either of the others named. However, there is at present, in Jibouti, a large railway station of a size and importance sufficient to represent the existence and establishment of the most paying line in any country, and the rails have been excellently laid for 165 kilometers. The construction has now entered Abyssinian territory, where protection and control are beyond the hands of the French government.

When the railway is completed, if it succeeds, a great boon will have been bestowed upon all those who trade with Abyssinia, since that country may be opened up; but Abyssinians do not appear to be greatly attracted by European products. Till now there has been little demand for aught save rifles, revolvers, and cotton goods, among the inhabitants of Abyssinia. At present, however, there is a disposition on the part of merchants to make use of the railway. From the terminus now reached camels must be engaged and a caravan formed to continue the journey to Harrar. There are signs that this trial of the railway is premature, and cases have occurred and continue to occur, where goods dispatched from Zaila, though leaving subsequent to those sent by rail, have arrived in Harrar first. However, this is a matter which the merchants will inevitably discover themselves. The Zaila route, though known to be slow, is also known to be sure. For the present it must be expected that all traders will wish to try the railway, and a time of depression for Zaila is certainly near at hand. Then the caravans will depend on local trade, and that which is provided by a few conservative Arabs who prefer old ways to new.

#### THE EXPANSION OF WINTER FARMING.

BY GEORGE E. WALSH.

The idea prevalent in some quarters that agriculture has not kept abreast of modern industrial developments is so far from the actual truth that occasionally the public is surprised by reports which indicate a change and revolution in methods and results of a most phenomenal character. In nothing has our agriculture changed more decidedly in recent years, however, than in the seasons of production. Science has deliberately set at defiance all the laws which govern the seasons of growth, and in the conflict it has proved a great triumph for man. Winter farming has become in the past decade an industry more profitable and successful than ordinary summer gardening or farming.

The demand for farm products in winter, when most of them are scarce and difficult to secure, has been responsible for the growth and expansion of winter farming. To-day this industry is of national importance, and adds millions of dollars to the wealth of our country. Lands that were formerly considered almost worthless have attained through this industry considerable value, and farmers who were disappointed at the outlook of their profession have suddenly discovered new means of reaping financial rewards for their labor and genius. Instead of following in the old ruts in vogue fifty years ago, they have branched out in entirely new lines to develop an industry that is as fascinating as it is profitable.

Naturally one thinks first of truck gardening, either under glass in the North in winter or along the belt of Southern States, when this subject is broached; but winter farming is not by any means confined to even this field. Winter dairying has become in the last five years one of the most profitable sources of farming, and it is pursued by the most progressive dairymen of the country with great success. By means of the silo, succulent food is stored away for winter feed-

ing that produces almost as fine milk and cream as the June grass. The milk and cream in winter time are worth so much more than in summer that the dairymen find it profitable to provide good winter quarters for the best cows and to feed them with the best food.

The poultry farmer has likewise changed his methods, and by means of the incubator and brooder winter and spring broilers are produced to-day in enormous quantities for our tables. Winter poultry is to-day about the only product of the chicken farm that actually pays a good profit. The high prices obtained for spring chickens and broilers out of season have caused complete changes in this industry. Those who depend upon the eggs for their profits are endeavoring to induce the hens to change their season of laying, so that winter eggs will be had in abundance. Extensive experiments in winter feeding and winter breeding in glass-covered houses have produced results which encourage the poultrymen to believe that eventually breeds of hens will in time be reared which will lay their eggs in winter instead of summer. At present the results obtained are not entirely satisfactory.

Hothouse lambs have become important parts of our winter diet in recent years, and breeders have established enormous houses where these delicate animals can be reared and fattened through the coldest of our winter weather. The work is profitable, and the breeders are increasing the industry each year. Hothouse lambs are delicacies out of season at present, but in the future they may become an ordinary part of our regular winter diet.

Hothouse fruits and vegetables multiply in quantity and quality every year. The industry is expanding so rapidly that the annual winter supplies of these delicacies are running up into thousands of tons. Around Boston there are several hundred acres of land covered with glass where fruits and vegetables are raised for the winter markets. Jersey and Long Island are also centers of this industry, and hundreds of acres are now under cultivation right through the winter. These hothouse products bring high prices all through the winter, and from two to four crops are raised annually on the same land. In the spring, when the weather grows warm, the glass sashes are removed, and the plants for the summer markets are raised as easily as if the land had not been producing all winter. When the cold autumn frosts come, the glass sashes protect the new crop that has been planted for the Christmas holiday seasons. Then when these winter products are harvested, seeds for an early spring crop are sown, and by the time Easter is here fresh vegetables are again ready for picking.

The truck products raised under glass in winter receive the most modern intensive culture. The soil is of the richest, well heated by steam pipes, moistened properly, and sometimes lit artificially at night time by arc lights. The electric light tends to stimulate the growth of certain vegetables, and the season of maturity is thus rapidly hastened. The profits from this business often run from 50 to 80 per cent on the investment, and during the rough winter weather when Southern truck cannot reach the markets, prices for the vegetables raised under glass soar up to almost fabulous prices. Yet in spite of the great number of acres of land covered with glass and devoted to winter farming, the supply hardly keeps pace with the increasing demand, and there is ample opportunity for further expansion in this line.

Winter gardening and farming in the southern belt of States where the climate is warm enough to produce the products out of doors have spread with phenomenal rapidity in recent years. Whole sections of States have been reclaimed by this industry, and land that was worth only a few dollars an acre ten years ago sells to-day for two or three hundred dollars an acre. Our whole system of living and diet has been transformed by this industry, and our winter season is supplied with fruits and vegetables almost as freely as the summer.

The expansion of this form of winter farming has been due to the railroads and steamship companies operating lines along the coast or through the belt of States with climate and soil suitable to the business. The construction of refrigerator cars which would enable growers to ship their strawberries and tomatoes from Florida and Louisiana to New York or Boston in midwinter gave a great stimulus to the industry. It is now possible to land the most perishable fruits and vegetables in New York from the most distant gardens within seventy-two hours after picking and in perfect condition. Each year the source of the supply is extended. It was first the Carolinas, Norfolk and Georgia which monopolized this industry. Then Florida entered the field, and finally the gardens spread along the Gulf and included those in the Mississippi Valley. California made special efforts to ship her fruits and vegetables to Eastern markets in cars made for the purpose, and now Texas and even Mexico are entering the field with their peculiar farm products. There are some 60,000 refrigerator cars engaged in this traffic in the winter season, distributing

the fruits and vegetables of the tropical and semi-tropical gardens and farms to the large cities of the North, South, East and West. The best of these cars are scientific products of modern genius, and they carry their loads of fruits as carefully as a Pullman palace car transports its millionaire occupant.

Strawberries from the Carolinas alone amount to some 12,000,000 quarts a year, while California pours across its borders some 193,000,000 pounds of fresh fruits. New York city alone absorbs some 4,000,000 packages of Southern vegetables every winter. All told, the winter farming which supplies the cities with their fruits and vegetables in the cold season represents an industry mounting up into many millions of dollars. All this is pure gain for the farmers and land owners, who formerly made little or nothing from the soil which is now brought under contribution to feed us with a winter diet of fruits and vegetables. The creation and expansion of the industry represents wealth added to the country just as surely as if new gold mines had been discovered which yielded annually a dozen million dollars' worth of the precious metal.

#### SCIENCE NOTES.

Prof. Charles Wilson has announced to the Royal Society a new determination of the temperature of the sun. His figures are 6,200 deg. C. (11,192 deg. F.). It is stated that the absorption of the sun's atmosphere probably makes this temperature equivalent to 6,600 deg. C. at the surface.

Tests made of aluminium bronze at the Zurich Polytechnic show that the specific gravity rises and falls as the percentage of aluminium is increased or decreased. For soft alloys the maximum strength was obtained with three and four-tenths per cent of aluminium, for hard alloys with one and four-tenths per cent of aluminium. The addition of silicon increased the specific gravity, but reduced the elasticity. Iron added was not observed to alter the characteristics of the alloy in any great degree.

Near the River Ebrosowka, eastern Siberia, Dr. Herz states that he discovered a huge mammoth preserved in the ice. The animal had assumed a reclining position with its feet peculiarly bent beneath its body. Dr. Herz inferred that it had fallen down a declivity and had been instantly killed. Grass was found in the mouth of the animal, and food in its stomach. Two thousand years elapsed since that last mouthful of grass was torn from the sod. The animal was covered with a coat of rather thick, red-brown hair.

The steamship "Afridi," which dropped anchor in New York Harbor on March 23, brought with her a collection of rare animals for the New York Zoological Gardens. Among them is a three-year-old hairy-eared rhinoceros, one of the only four known to be in captivity; four bears from Korea and Japan; nine monkeys of the red-faced Japanese breed; one fox, one raccoon, two silver badgers, one sand badger, one wild boar, two yellow martens, one lynx, two civet cats, four salamanders, two peacocks, and six parrots. A valuable orang-outang, three gibbon monkeys and a leopard died on the voyage.

The British government has just completed the survey of the English section of the Victoria Nyanza, in central Africa; for the establishment of a steamer service on the lake in connection with the Uganda Railway, which has recently been completed. The surveying has occupied thirteen months and was carried out by two surveyors in two small steel boats. Every part of the British shore of the Nyanza was explored, aggregating over 2,200 miles of coast line, mainland, and islands. The latter have been accurately charted for the first time, and in parts the maps of the lake shore have been altered from their existent physical condition. The lake is studded with a very large number of islands of varying sizes, many of them densely populated. The British portion of the lake is about 135 miles from east to west, and about 90 from the north to the Anglo-German boundary, excluding the eastern gulf, 40 miles long, which has now been properly mapped. The lake is constantly subject to storms, which render it dangerous to navigation. Owing to this fact, and the smallness of the boats, it was not thought advisable to visit three small islands which were visible far out in the lake, but with these exceptions every island has been visited and mapped by the expedition. During the journey the surveyors discovered several islands inhabited by savages. Even some of the tiniest rocky islets were found to be tenanted by fishermen. Preparations are being made for the development of the lake traffic with the opening of the railway, and passengers leaving the train at Port Florence, on the lake shore terminus of the railroad, will step on board twin-screw steamers alongside the jetty, which will convey them to the different stations. One of the steamers for this service has already left England, and should be on the lake by June. Another steamer will follow. These vessels are each 175 feet in length and draw 6 feet of water.