American Ginseng.

BY M. G. KAINS.

For centuries Chinese ginseng (Panax ginseng) has been to China far more than quinine has been to America. Unlike quinine, however, its use has not been limited to certain classes of disorders. It has been used in America only as a demulcent, a mild aromatic and stimulant, for which purposes our materia medica recommends many more effective drugs. Not so in China; the conservatism of the Mongolian and his belief in the occult have maintained an exaggerated estimate of its efficacy. It has been employed by the Chinese as a specific for nearly every ailment that flesh is heir to, from the most trivial to the most serious. It is further thought, such is the superstitious belief, to procure and insure immunity from all sorts of diseases and even to possess the power of prolonging life. It is well named panacea.

The esteem, nay veneration, in which it is held and the high price that it commands in the market have naturally led to a thorough search for a substitute, not only in eastern Asia but in other parts of the world. Japan and Korea have furnished roots that so closely resemble true ginseng in form that their detection in samples of the genuine is attended with great difficulty. These roots are simply adulterants, since they lack the officinal qualities of the true root. America, however, produces a plant (P. quinquefolium) that not only resembles the latter in appearance but also in its properties, and that has been an important article of commerce for more than a century and a half.

In 1714, Father Jartoux, a missionary in China, published "The Description of a Tartarian Plant called Gin-seng" in the Philosophical Transactions of the Royal Society of London. A copy of this letter fell into the hands of Father Lafitau, a missionary among the Iroquois Indians. In 1716, after diligent search and inquiry among his flock, he succeeded in finding a plant near Montreal, Canada, that answered well the description given by Father Jartoux.

Samples of this root were collected by the Indians and exported to China by the French. These shipments were so well received that a considerable trade was built up, much to the profit of the traders. In Quebec the root was purchased at 2 francs a pound; in China it was sold as high as 25 francs. Trade with China was at that time controlled by the Company of the Indies, which, believing that the market demand was slight, at first allowed its officers to handle ginseng as a private speculation. In 1751, however, seeing that the commerce in this root was becoming important, the company prohibited private ventures on the part of its officers and assumed control itself. In only a short time the price was advanced from 12 francs to 33 francs a pound. But, in 1752, owing to an excessive demand in France, a large quantity of the root was dug out of season and improperly dried in ovens. When this reached China it was found to be of such poor quality that it was refused. This practically ruined the Canadian trade.

The New England States and, later, the sister States as far west as the borders of the Mississippi, profited by the misfortune of their northern neighbors and gradually built up a trade with the Chinese that in 1858 amounted to 366,053 pounds, valued at $193,736, or about 52 cents a pound. Since then the industry has continued to advance until, in 1896, the exportation reached 199,436 pounds, valued at $770,673, or an average price of $3.86 a pound. It will at once be noticed that the quantity exported in 1896 is only about half as much as was shipped in 1858, but that the average price has increased more than seven times. This increase is due to the market demand and an inadequate supply; the decrease in quantity to improper methods of digging more than anything else. (The figures for the exports of 1897 have not yet been made publicly available.)

American ginseng is a perennial herb indigenous in almost all of the States east of the Mississippi, in the first tier of States west of that river and in Canada. It is of very slow growth, even under the most favorable conditions, reaching a commercial size not sooner than the fourth year. In the forest, its native haunt, it rarely produces seed before that time, and even when older this is borne in comparatively small quantities, seldom being more than fifty seeds to a plant. In a state of nature its only means of propagation is by means of seeds. These ripen in September. If, therefore, the plant be dug prior to the ripening of the seed, it is deprived of its only means of perpetuating itself. Yet this is the very thing that happens. The "sang" diggers, a class of people that eke out a livelihood by hunting this root, by trapping and shooting, exercise no judgment as to the season of digging. The plant is dug as soon as found, whether in April, August or November. It is little or nothing to them that the quality is poorer and that the shrinkage is greater than when dug in season. It is also of small moment that the two Virginias have passed laws to prevent the digging until after the fall of the seed. Their nomadic life insures them against capture, and if they are accidentally caught they live at the expense of the State and go back to their old tricks as soon as released. The only other causes of the lessened supply of this root are the clearing of forest lands and the browsing and trampling of stock pastured in the woods.

The visible decrease in the supply of the wild root and the constant increase in the market price have led to many experiments in the cultivation of ginseng. But so frequent have been the failures that its culture has been declared impossible. Such is, however, not the case, since, with proper attention to its peculiarities, it may be grown successfully and profitably. It is of prime importance that the conditions of the forest be closely imitated. In fact, the best place to locate the plantation is in the woods, although, if provided with artificial shade, such as is afforded by an open lattice roof, the plots may be located in the garden or the orchard. It is essential that the beds be made in loose soil retentive of moisture and well supplied with humus, that they be kept free from tree roots, well shaded, fenced off to protect them from stock and covered in the winter with a mulch to prevent damage by severe frost. The seed must never be allowed to become dry or it will fail to germinate. The risk run in saving seed is all the greater since the seed must be protected until eighteen months old, as it will not sprout sooner; i. e., seed ripened in the autumn of 1897 will not germinate until the spring of 1899. The seedlings must be transplanted at least once before being set in the final beds. At all times these beds must be kept clear of weeds by hand. Ginseng will not tolerate the use of tools; horse cultivation is out of the question. Such, in brief, are the principal points to be observed in the cultivation of the plant. The care necessary in the preparation of the root for market is no less important.

In the autumn of the sixth or seventh year—sometimes as early as the fifth—from the time of sowing the seed, the roots may be dug. This is done not earlier than the latter part of September, after the seed has been gathered. Roots that have not attained a desirable size should be replanted, only the largest being marketed.

The operations of washing and drying must be very carefully done, since the mutilation of a root lessens its value in market. In the washing the roots are agitated with a broom in a tub of water. The water is frequently changed to insure cleanliness, and the roots, not perfectly clean at the close of the rough washing, are finished by hand brushes. They are then dried on wire netting trays in a current of warm air, the fibrous portion, or "beard," as it is called, being rubbed off when it becomes brittle. This "beard" is sold to the local drug trade for people who like to chew ginseng. In the drying the roots lose about two-thirds of their weight and become very hard and brittle. They are then ready for shipment.

The cultivation of ginseng is a promising industry. The extension of the cultivated beds is not at present rapid enough to supply the deficiency in the wild root, and an immediate glut is not likely. Should there be a temporary decline in price or should a glut occur, as has sometimes been the case, a grower need lose nothing, since he may leave the roots in the ground for one or more seasons, knowing that they are improving in size and quality. Other advantages in this industry are that it may be made incidental to general farming, may be started and continued without excessive outlay of capital, and may be confined to land that otherwise could not be used for cultivated crops. When properly managed, a very small area may be made to yield a very large proportionate return.

One grower, Mr. George Stanton, Summit Station, N. Y., obtained from 4½ square rods, in five years, 320 pounds of green root, which, when dried, would have been about 106 pounds, worth, at the price then ruling for cultivated root, $575. On the other hand, figures such as these must not be used to compute returns from an acre or acres, since the cultivation of ginseng in large areas is likely to prove infeasible from inattention to necessary detail. Ginseng is an exacting crop and will be disappointing if not properly managed.

WHILE the bubonic plague seems to be spreading in India and threatens almost to equal in fatality the epidemic of a year ago, the French physicians in Algeria have discovered a disease in Africa which, if the meager reports which have been received prove true, is none the less fatal. It is a mysterious disease, and no satisfactory diagnosis has yet been made of it. It first shows itself by the patient having an inordinate desire to sleep. Its symptoms resemble those manifested in laudanum poisoning. If the patient be not at once aroused, he soon falls into a stupor, which is succeeded by death. From its symptoms it has been called by the correspondents of French medical journals in Algeria "La Maladie du Sommeil" (the disease of sleep). Europeans are not susceptible to it, Arabs only slightly, but the negro falls a ready victim. Two doctors of the University of Coimbe have a theory that the disease is microbic. With some bacilli in serum obtained from the blood of a young negro who had died from the disease they inoculated half a dozen rabbits. The little animals became drowsy, and soon died, betraying all the symptoms of the disease.

THE ZOOLOGICAL STATION AT NAPLES.

BY E. O. HOVEY, PH.D.

One of the great attractions of the beautiful city of Naples is the aquarium, delightfully situated on the shore of the bay in the midst of the semitropical foliage of the Villa Nazionale, or city park, the favorite resort of all residents of Naples, whether native, foreign, or transient. This city has peculiar advantages for the location of an aquarium, because its bay is remarkably rich in animal life, many semitropical and even tropical forms being found in its waters, and storms driving in many of those which otherwise are found only in the broader expanses of the Mediterranean Sea. In 1870 Prof. Anton Dohrn, then an enthusiastic young zoologist, went to Naples imbued with the idea of establishing an institution on the shores of the bay, partly for the purpose of exhibiting in glass tanks the beautiful and strange forms of animals to be found in the sea, but mainly for the purpose of studying these animals under the best conditions possible, not only as to their anatomy and their physiological relations to other animals, but also as to their habits, food, etc. Being a man of pecuniary means as well as of enthusiasm and great scientific ability, Dr. Dohrn, after delays and hindrances that would have proved insurmountable obstacles to a man of less determination, attained his desired object, and he established a zoological station which for years has been the principal place in the world for the study of marine animal life, and the influence of which upon the science of zoology has been world wide and of incalculable value.

The building is a three-story and attic structure, built of stone and stuccoed, and consists of two parts, separated by a courtyard and connected overhead by means of bridges. The ground floor of the larger building is devoted to the aquarium, the second, third, and attic floors to offices, the library, laboratories and work rooms. The smaller building is used for receiving, preserving and storing the material brought in from day to day, laboratories and study rooms for some of the officials and others.

The aquarium proper contains twenty-six tanks having glass fronts and lighted from above in such a manner that, as a person gazes into them, he can readily imagine himself, though dry and comfortable, standing on the bottom of the sea with the animals at home about him. There are no open tanks, as there are in the aquarium at Castle Garden, New York City, and no light enters the room except that which comes through the water.

One tank is devoted to starfish, sea urchins and the like, three or four to the different kinds of cuttle fish and devil fish, several others to crabs, lobsters, crawfish and shrimps, while others contain many forms of large and small freely swimming fish. One tank has in it some wonderfully beautiful worms which visitors often mistake for flowers; beside it is a tank full of sea fans, sea feathers and sea pens; and farther along are the delicate medusæ or jelly fish. True coral, precious coral and sea anemones may be found in other tanks, and the wonderful protective and adaptive devices of various animals to their surroundings are well shown. The richness of color, the variety of form and the grace of movement are sources of surprise and delight to every visitor, especially to one who is used to the scantier life and the more somber colors which prevail in northern waters.

The stocking of the aquarium and the supply of material for the naturalists at work in the station is cared for in a very complete way.

The station owns two steam launches, which are used for dredging and other heavy or distant work, and two or more small rowboats which are kept constantly busy collecting jelly fish and other surface forms of life which are driven into the harbor from the open sea. Furthermore, all the fishermen in the bay regularly bring to the station all the animals that come up in their nets that are known to be desired.

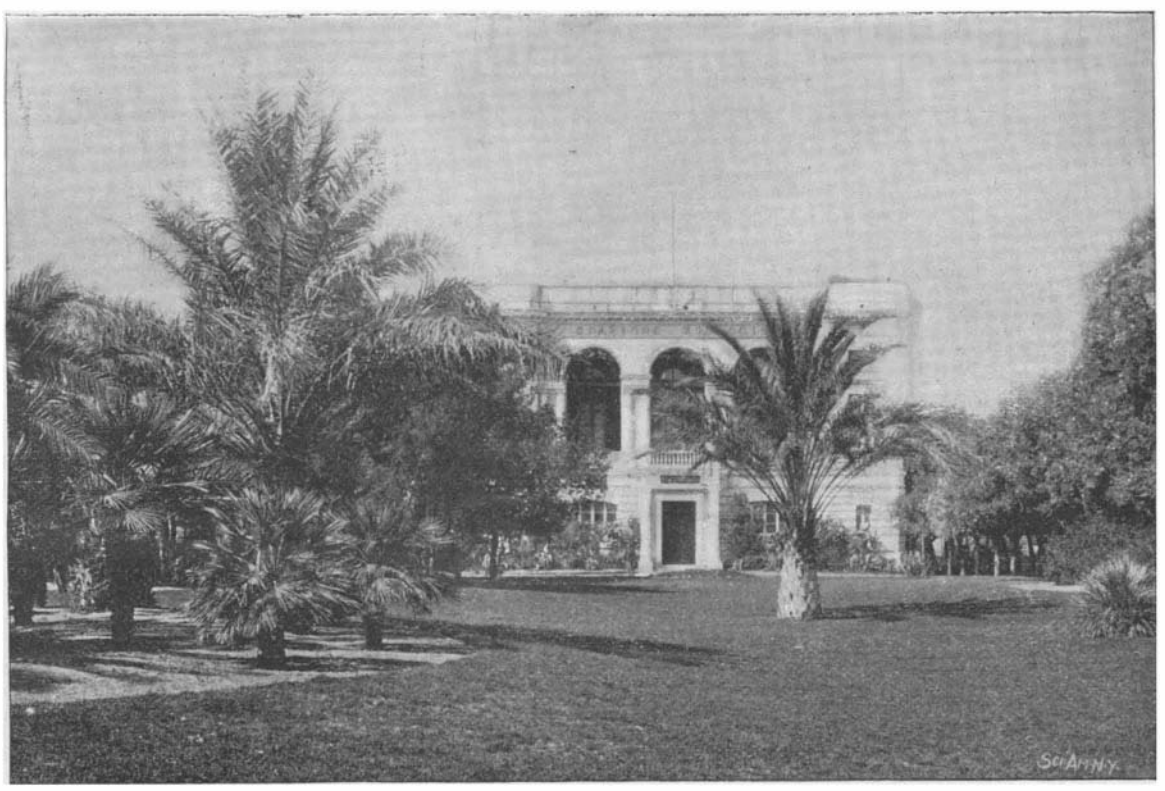
Every day the naturalists state what they need for the next day's work, and every evening corresponding orders are given to the crews of the boats belonging to the station. One naturalist may want fifty sea urchins of a kind, another twenty-five starfish, another a large or small number of jelly fish or crustaceans or what not, and each finds his wants supplied the next morning, if the weather has been favorable.

This leads to the mention of another branch of the work here which appeals strongly to the public, namely, the preservation of marine animals, particularly invertebrates, for exhibition in museums and for purposes of study. Dr. Lo Bianco has won for himself and the station an international reputation by the wonderful results which he has attained in the preservation of the extremely delicate and contractile forms of marine life. Beginning work for the station as a fisher boy, he soon showed peculiar ability in handling the animals which were obtained. He studied their habits, anatomy and composition carefully and made many experiments to determine the best method of killing and preparing each species so that it would present a lifelike appearance in the exhibition jar, until he succeeded in obtaining the beautiful results which have been distributed to museums and colleges

all over the world and have brought to the knowledge of countless thousands some of the wonders of the sea. The animals which are intended for dissection must often be preserved in a different manner from those which are intended for exhibition, and in this line of work, also, the station stands pre-eminent.

Although the aquarium is the most popular portion of the station and the public sees only that and the preserved animals which are sent out to museums, the chief mission of the station, in the eyes of the director, Dr. Dohrn, and of all other scientists as well, is, as has already been stated, to provide a place for the study and investigation of marine life under the best conditions attainable on land, and most of the station building is given up to provisions for this purpose. The regular scientific corps of the institution consists of nine men, including the director, each of whom makes a special study of some form of animal life.

The secretary and treasurer of the institution is H. Linden, to whom the writer is indebted for many items of information regarding the station. The average number of naturalists not connected with the institution who study there is from twenty-five to thirty each year. Each of these is an independent worker along some particular line of study, no elementary instruction being given by the officers. Each student is provided with a table or desk, drawers, racks, bookshelves, microscope, glass ware, alcohol and other reagents, drawing materials, glass tanks with running and stationary water; in fact, with everything needed to carry on his investigations and with animals to work upon. The library is very full upon all subjects bearing upon zoology, a specialty being made of all the periodicals dealing with the science. Furthermore, fully equipped laboratories are provided for the investigation of the chemical and physical questions which arise, and there are optical and photographic rooms and a machine shop for all ordinary grades of work. More than a thousand naturalists have availed themselves of these facilities for investigation.



GROUNDS OF THE NAPLES ZOOLOGICAL STATION.

To start the station in 1872 required about $100,000, besides the land donated by the city of Naples. Friends of science in Germany and England contributed about $40,000 of this amount, but the remainder came from Dr. Dohrn's own fortune. That the Neapolitans appreciate the public character and the value to the city of the station and its aquarium was shown ten years later, when they freely appropriated from their beautiful park the land desired by Dr. Dohrn for a much-needed addition to the original building. The money necessary to meet the running expenses of the institution comes from several sources. Each contributor of £100 sterling annually to the station supports a "table" and has the right to name a person to receive the benefits thereof. At present thirty tables are thus provided for, the Italian government paying for seven, different institutions in Germany for eleven, England for three, Russia and Austria for two each and Belgium, Holland, Hungary, Switzerland and the United States for one each. The institution in this country which always supports a table there is the Smithsonian Institution, at Washington, but some years Columbia University also has one. The tables are paid for year by year, and there is no endowment fund, though Dr. Dohrn is striving now to establish one. The German government appropriates £2,000 a year for the station, the fees of visitors to the aquarium amount to about £1,000, the sale of preserved animals to about £700 and the sale of old material of various kinds to about £100. The expenses, however, always keep pace with the income or get ahead of it.

A NEW island has recently sprang up near the northwest coast of Borneo, opposite the town of Labuan. Its formation is connected with the earthquake which was observed on September 21, last year, near Hudat (British North Borneo). The island consists of argillaceous earth and rock. It is about 200 meters long and 150 meters wide, and has increased in size since its appearance. The emerging of new islands from the ocean, as well as their disappearance, is by no means a rarity. Among others the Graham Island and the Falcon Island are examples of this fact.

THE NAPLES ZOOLOGICAL BUILDING.