

volvulaceous plant, with edible root, is cultivated in Cochin-China, and may be the same plant which is raised as a variety under the name of *Umara* (*Convolvulus chrysochizus* (Soland. ?), in Otaheite, of the Sandwich Isles, the Eastern Isles, and Northern New Zealand.

The Arum root (*Arum colocasia* L.), on account of its farinaceous tuberous roots, is one of the most important plants of the tropics. It is very probably an Indian plant, which is cultivated in the whole of Central Asia, in very numerous varieties, under the sanscrit name *Kuchoo* (*Kutschu*). Here and there it is found running wild, though nowhere growing truly native. It was carried westward in the very earliest times, and with *Nelumbium speciosum*, cultivated in Lower Egypt, particularly towards the Delta of the Nile, where it is now grown under the name *Colcas*, Kulkas; while the *Nelumbium* has long ago again disappeared. The Greeks meant the *Nelumbium* by their *zolozaasia*, supposing the root sprouts to be used as food. They were manifestly wrong in this, however, since the root is of very little use on account of its fibrous texture. The Spaniards received the Aron root from the Egyptians, which they cultivated in the southern portions of their country, although it become quite at home there.

We are at present unable to say, with certainty, how far the Aroideæ, cultivated in Ceylon, the Sunda Islands, and the Moluccas, belong to this or to other species. It is also more or less doubtful whether the Tarro or Tallo (*Arum esculentum*, Forst.), does not in all probability represent the same species; a supposition which, besides the similarity of the characteristics of the two plants, is corroborated by the fact that the *Arum colocasia*, in Java, is known by the name of Tallus, which is probably identical with that of Tallo, used on the South Sea Islands. It is not even improbable that these islanders may have become acquainted with this plant on their voyages to the west, and brought it back with them.

The Ighame, or Yam (*Dioscorea alata*, L.), is a plant cultivated in the tropics of the whole earth on account of the nutritious qualities of its root, although far inferior in excellence of taste to the sweet potato. This root is very much prized, and it often attains an enormous size, and a weight of from thirty to forty pounds. The Indian archipelago and the southern portion of the Indian continent, is the starting point from which this, the most cultivated species of *Dioscorea*, has spread. Thence it was first carried to the eastern coast of Africa, next to the west coast, and from thence to America, where the names Yam, Ighame, are derived from the negroes. In the negro dialect of Guinea, the word "yam" means to eat.

The want of a Sanscrit name for this plant in Northern India clearly shows that it is not indigenous there. The other species of *Dioscorea*, cultivated more or less on the islands of the Indian archipelago and the continent, are *Dioscorea pentaphylla*, L., *D. bulbifera*, L., *D. aculeata*, L., and *D. deltoidea*, Wall. (*D. sativa*, L.). All of these have their native home in the Indian Archipelago and in India itself, and are nowhere met growing wild.

The tubers of the Tacca (*Tacca pinnatifida*, L.), furnish a mealy nutriment to the inhabitants of the Society Islands and the Moluccas, where the plant is met with both wild and in a state of cultivation.

In the latter case, the tuberous root loses something of its original acidity and bitterness. The same is the case with the sharp tubers of *Dracontium polyphyllum*, L., which is also used upon the Friendly Islands for want of other kinds of food.

The tuberous root of the Tupinambur or Jerusalem artichoke (*Helianthus tuberosus*, L.), is of less importance. America is its native country, although it is still doubtful from what point it is derived. The name under which it was first cultivated in Europe, at the beginning of the seventeenth century, (*Aster peruvianus tuberosus*), furnishes a clue to its probable birth-place, which is strengthened by the fact that three other species of *Helianthus* are peculiar to the chain of the Andes. The Tupinambur is chiefly cultivated in the United States of North America, and is very little used in Europe.

The tubers of the Oca or *Oxalis tuberosa*, Mol., furnish a scanty substitute for more generous means of nutriment. The oca is cultivated in the Andes, from Chile to Mexico, and reaches a height of 8,000 feet. Its tubers vary from the size of peas to that of nuts, and of no very pleasant taste. The same is the case with the *Oxalis crassicaulis*, Zucc. (*O. crenata*, Jacq.), which is indigenous to Mexico, Peru, and Colombia, as also with the *Oxalis tetraphylla*, Cavan., and *O. esculenta*, Hort. Berol.

It is very probable that the *Oxalis enneaphylla*, Cav., indigenous to the Malouine and Falkland Islands, as well as *Oxalis violacea*, L., of Carolina, are not much better articles of food. In the same category may be included the tuberous root of the *Tropaeolum tuberosum*, Don.

The Ulluco or Melloco (*Ullucus tuberosus*, Loz.), a juicy plant with creeping stem, the sprouts of which swell at the tips into tubers from the size of a hazel nut to that of a pigeon's egg, like the sweet potato, is also a native of the Andes of Bolivia, Peru, and New Granada. These tubers are of an insipid taste, although improved by freezing. They are still cultivated at a height of 11,000 to 13,000 feet in Popayan and Pasto, (Peru,) under the name of *Oca quina*. During the period of the potato disease in Europe, an attempt was made to replace this tuber by the oca, but without satisfactory results.

There is a tuberous root of *Apios tuberosa*, Mönch, (*Glycine apios*, L.), found in northern America, (Canada, Virginia,) which is somewhat similar to the Jerusalem artichoke. These taste like the artichoke, and like them are eaten as food and their seeds applied to the same purpose. The mealy root of *Lupinus littoralis*, Douglas, is used in a similar manner on the northwest coast.

A third leguminous plant, the potato-bean, (*Stizolobium tuberosum*, Speg., *Dolichos tuberosus*, Lam.), found on the Antilles, is remarkable for tubers the size of a child's head. A fourth kind, the turnip-bean, (*Pachyrhizus angulatus*, Rich., *Dolichos bulbosus*, L.), found in the Philippines and Moluccas, has a root tasting like the turnip. The seeds of the former also serve as food; the latter is known in the whole of tropical Asia.

I may here mention bulbs of two species of crocus. That of the *Crocus vernus*, L., or spring crocus, is of little importance, as it is only eaten by children; but the much larger bulb of the *Crocus edulis*,

Boiss., is brought to market in Damascus at the time when the bulb is about sprouting, and is there very much prized as a vegetable. (Th. Kotschy.)

We may here mention also the tubers of the Arrow-head (*Sagittaria sagittifolia*, L.), and the creeping root of *Nelumbium speciosum*, W., which in China, and the latter in Japan and tropical Asia, are frequently used as food. The stalks of *Nelumbium*, according to C. Von Hügel, are not dissimilar in taste to our broad beet, with a somewhat sharp after-taste.

It is a well-known fact that the mealy rhizoma of *Nymphaea lotus*, L., (the Egyptian lotus,) and probably also that of *Nymphaea coerulea*, L., served the inhabitants of Egypt for nutriment in the oldest times as well as in the present day. The same is the case also in the East Indies with the *Nymphaea edulis*, D. C., and in China with *Euryale ferox*, Salisb.

A few plants are distinguished by the presence of jelly, or by a starch-like condition of their cellular substance, among which are various species of Algae, or sea-weeds, and Lichens. From both these great groups of plants mankind, driven by necessity, has been able to derive nutritious substances from materials sometimes more or less unpalatable.

Among the Algae most common and frequently used as food, are *Ulva lactuca*, Lin.; *Iridaea edulis*, Bory, (*Halymenia edulis*, Aghd.); *Laurentia pinnatifida*, Lamour., (*Pepper dulce* of the Scotch); *Rhodomenia palmata*, Grev. (*Halymenia palmata*, Ag.); *Rhodomenia ciliata*, Grev. (*Sphoerococcus ciliatus*, Agh.); *Laminaria saccharina*, Lam., the Sugar tang; *Laminaria digitata*, Lam., &c.; all used on the coasts of Ireland, Scotland, and Northern Europe; partly raw and partly prepared. Here, also, belong the *Alaria esculenta*, Grev., and the *Porphyra purpurea*, Agdh., which, under the name of *Laver*, appears on the tables of the English as a choice dish. The starch tang or Ceylon Moss (*Plocaria lichenoides*, J. Ag., *Sphaerococcus lichenoides*, Ag.), is also used as food, either in its natural condition or as a constituent of the Indian bird's nests.

Among the Lichens, the Manna stalk (*Parmelia esculenta*, Ledeb., *Lecanora esculenta*, Spr.), occupies the first place; it grows chiefly upon the Tartarian and Kirgese steppes of Tartary in great numbers, upon dead, loamy soil, and unfrequented rocky cliffs, loosely attached and consequently easily separated. When it is collected in hollows, or perhaps carried a considerable distance by high winds, it produces the remarkable phenomenon of showers of manna rain; all which has been observed at different points quite recently, and at various times, in Asia Minor and in Persia.

This lichen, which occurs usually in pieces the size of a hazel-nut, is distinguished by having about 23 per cent. of jelly, some inulin, and a large proportion (about 66 per cent.) of chlorate of lime. Ground up and baked as bread, it more or less satisfies the appetite. It is not improbable that the manna of the Israelites was, not as Ehrenburg believed, the expressed and hardened juice of the Tamarish (*Tamarix gallica*, L. Var., *mannifera*, Ehrb.), but the manna lichen itself, of whose existence in the regions of Sinai we, however, have no direct information.

A second lichen, used both in medicine and for purposes of nutriment, is the Iceland Moss (*Cetraria islandica*, Ach.), which is distri-

buted over the whole north of Europe and America. By separating its bitter constituents it furnishes a very good article of nourishment in those inhospitable countries, and is sometimes converted into bread.

To the various plants already mentioned we may add the seeds, fruit, and other parts of several plants, which although not so generally distributed, are yet, nevertheless, not only equal to them in nutritious qualities and pleasant taste, but may here and there excel them, such as the Sago-palm, the Mauritius palm, the Chestnut, and similar mealy seeds of several other kinds, as the Oak, the Bread fruit, &c. There are also the various pod fruits, beans, peas, lentels, &c., as also the various eatable fungi or mushroom.

The Sago-palm (*Sagus rumphii*, Willd.), often forms great forests upon the islands of the Indian ocean and Moluccas, and is there easily propagated by its suckers. The white inner part of the stem, thickly permeated by bundles of fibers, abounds in a marrowy substance, which, when baked into bread, furnishes a daily food to the inhabitants of most of the southern and southeastern parts of Asia. This, in the form of flour and of granules, is widely distributed in commerce as sago. One trunk of the age of 15 years, will furnish sometimes 600 pounds of sago. A similar use is made in the same country of the mealy sago-palm, (*Sagus farinifera*, Lam.) Here, also, we may mention the Mauritius palm (*Mauritia flexuosa*, L., jr.), which on account of its pithy stem, which contains a sago-like meal before flowering, is also called the sago-palm—Sago-palm of South America. It grows from the mouth of the Orinoko to the Amazon, through the whole of Guiana, in Surinam, and throughout northern Brazil, and even in Central America. Its red, scaly fruit tastes like ripe apples; and the mealy pith serves the Indians of these countries as a chief article of food. Even *Caryota urens*, L., *Corypha umbraculifera* L., and *rotundifolia*, L., *Phoenix farinifera*, Roxb., *Borassus flabelliformis*, L., *Arenga saccharifera*, Lab., *Elate sylvestris*, L., *Sagus raphia*, Poir., *Sagus laevis*, Reinw., *Dracaena terminalis*, Jacq., *Cycas circinalis*, L., *C. inermis*, Lour., and *C. revoluta*, Thun., as also *Diodon edule*, Lindl., furnish more or less sago. We may also mention *Puya bonplandiana*, Schult., the Achupalla of the hilly mountains of Peru and Popayan, in whose stems is found a very nutritious pith.

The seeds of the chestnut (*Castanea vesca*, Gärt.), when roasted or baked, are used in various ways for the preparation of flour and bread, and are of much importance to Southern Europe. From its native regions, (Asia Minor, Armenia, and Persia,) where at an early period it served for the nutriment of the inhabitants,* it was carried to the island of Euböa, and thence very easily to Greece, the Grecian islands, Lower and Upper Italy, the Hesperian peninsula, and even over the Alps, and everywhere has obtained no slight importance as furnishing an article of food. This stately tree forms even now entire forests on the mountains of Piedmont, Lombardy, and Tuscany, as well as of

* Xenophon states, that the children of the Persian nobility were fattened upon chestnuts. It is nevertheless probable that the chestnut is indigenous to the Himalayas, where several species exist.

Greece. In the valleys of the Waldenses, in the Cevennes, and in a great portion of Spain, it furnishes nutriment for the common people.

The Chestnut is the Jupiter's oak (*Αἰὼς βάλανος*), or the Eubœan nut, and with the edible oak or other eatable species of oak, probably constituted the first food of the original inhabitants of Greece. Cato calls it the Grecian nut. Virgil speaks of it as the Kastanian nut. At a later period, on account of its size and excellence in Sardinia, it was called the Sardinian nut. The largest variety at the present day is called *marron* in Italy.

Charlemagne commended the propagation of the *Castanea* to his subjects. This tree was first brought to England in the beginning of the sixteenth century. This variety of chestnut occurring in North America (*Castanea vesca*, var. *americana*, Michx.) is eaten raw, boiled, or roasted, although not depended upon as an article of food. The *Castanea pumila*, Michx., the chinquapin, of the more southern States, is also eaten there. China has a substitute for our chestnut in the *Castanea chinensis*, Spgl., and Java in the *Castanea argentea*, Blum., and *Castanea tungurrut*, Blume.

Several species of the genus oak (*Quercus*) distributed over the whole earth possess edible fruit, which, although rendered somewhat bitter and astringent by the addition of bitter extracts and tannic acid, may yet, when reduced to meal and roasted, be considered as not disagreeable. The fruits of several kinds of oak, however, are actually sweet, and taste like chestnuts. Among these are *Quercus esculus*, L., *Quercus ballota*, Desf., *Quercus persica*, Jaub. and Spach.

That the first inhabitants of entire Greece, not merely of Arcadia, must have derived their subsistence from acorns, before Demeter or Ceres arrived upon the field of Eleusis with her sheaves, is intelligible in itself, as well as that it may have been principally the most widely distributed *Quercus ballota* and *Quercus aegilops* that furnished them their nutriment. The *ἄγκυρος*, *Quercus aegilops*, L., (not *Q. esculus*, L.), was therefore principally held in honor, and we constantly find it adorning the grave of Ilios, the founder of Ilion, as well as the renowned oracle of Dodona. The beautiful custom of the "citizen's crown" is probably connected with the original use of the oak as a food plant. The *Quercus robur*, W., and *Quercus pedunculata*, W., certainly played the same part in ancient Germany, and, therefore, not without reason, was considered as sacred by the inhabitants.

According to Link there are in the vicinity of Lisbon whole forests of *Quercus ballota*, Desf., (actually indigenous to northern Africa,) which constitute the wealth of the country and nourish a number of men. The acorns are principally used for feeding swine, though they are also eaten by the poorer people.

Besides *Quercus edulis* and *Quercus ballota*, *Quercus pyrami*, Kotschy, and *Quercus persica*, Jaub. and Spach., are also eaten in Southern Europe. According to Th. Kotschy, the former is brought to market in the Bazar of Adana, and the latter serves as a material for bread in Southern Persia, (Laristan).

The *Quercus castanea*, Wild. (*Q. prinus acuminata*, Michx.), peculiar to the Alleghany mountains of the United States, furnishes also a pleasant-tasted fruit to the western hemisphere.

The tropical regions of the whole earth possess several fruits and seeds similar in taste to the chestnut. Among the most important of these may be mentioned *Bombax malabaricum*, D. C. This enormous tree belongs to the East Indies, has sweet and pleasant-tasted seeds, which are used both raw and roasted. The mealy seeds of *Carolinea princeps*, L. fil., indigenous to Guiana, when roasted, likewise taste like chestnuts. The young leaves and flowers, also, are used as a vegetable. The same is the case with *Carolinea insignis*, Swartz, of the Antilles.

The seeds of *Melicocca bijuga*, L., or Honey berry—the fruit of which we will mention hereafter—are roasted, and also taste like chestnuts. The sweet, chestnut-like seeds of *Cupania tomentosa*, Swartz, are also used in the West Indies. The seeds of *Blightia sapida*, König, of Guinea, have also a fine flavor when cooked and roasted with the fleshy arillus. This tree is now cultivated on the Antilles, as is also the case with *Laurus chloroxylon*, Sw., in Brazil, and *Sloanea dentata*, L., in South America. The *pot-tree* (*Lecythis ollaria*, L.), of tropical America, remarkable for its fruit the size of a child's head, is much prized on account of its chestnut-like seeds. There are still other species of *Lecythis* furnishing similar seeds. We may mention, in conclusion, *Castanospermum australe*, Forst., the seeds of which, the size of a chestnut, when separated from the hull, are used at Port Jackson like the chestnut.

The Bread fruit tree (*Artocarpus incisa*, Linn., fil.), has been distributed from the Moluccas, by way of Celebes and New Guinea, throughout all the islands of the Pacific Ocean, to Otaheite, but is nowhere to be met with growing wild. It is also naturalized in the Isle of France and tropical America. In its fruit, which is fit for use without additional preparation, it furnishes one of the most generous means of nutriment which the earth possesses. The rich abundance of the fruit which a single tree supplies throughout the entire year, makes it an inexhaustible source of life, the maintenance of which is the care of every family. Its many varieties, among which are several without seeds, show that its cultivation goes back to the most remote antiquity.

The *Artocarpus integrifolia*, Linn., fil., closely allied to the Bread fruit tree, is more peculiar to the western islands of the Indian archipelago. On account of its excellent fruit it is a special object of cultivation on the two Indian peninsulas, in Cochin China, and Southern China. It has only been recently introduced into the islands of the Pacific Ocean, as well as upon the Island of Mauritius, the Antilles, and the west coast of Africa. It is scarcely to be doubted that it occurs here and there growing wild, and that perhaps Ceylon and the Peninsula of Further India may be looked on as its original native land.

How far removed from those happy lands, where each Bread fruit tree constantly represents a ripening field of grain, are those regions of the earth where the hungry man is obliged to resort to the scanty nutriment of the root-stalk of the ferns, or, as in Iceland, to the root-stalk of the sand-reed (*Arundo arenaria*, L.), and of the Adderswort (*Polygonum bistorta*, L.).

The pod fruits, on account of the mealy character of their seeds,

belong to the series of farinaceous substances. The great abundance of an albuminous material, legumin, which is found in them, in addition to the starch, places the pod fruits upon the same level with the most nutritious cerealia, such as the wheat, &c.

Of all the pod fruits, it is probable that the bean (*Vicia faba*, Linn., *Faba vulgaris*, Mönch.), indigenous to the southwestern banks of the Caspian sea, has been longest known and most widely distributed. Even by the Greeks and Romans it was considered as sacred, and it was cultivated by the Jews. A temple dedicated to the God of Beans, *Kyanetes*, stood upon the sacred road to Eleusis, he having first cultivated beans. The *Kyanepsia*, or Bean feast, which the Athenians celebrated in honor of Apollo, was characterized by the use of beans. The bean was an impure fruit to the Egyptians, who did not venture to touch it. Pythagoros even forbid his scholars to eat beans. The black speck on the white wings of the flowers was formerly looked upon as the written character of death; for which reason the bean in ancient times passed as the symbol of death. The name *ζωαμύς* came from *ζῆν*, as well as the Latin word *Faba*, from *φάβην* (Landerer).

The bean is not found in the catacombs of Egypt, perhaps for the the above-mentioned reason. What the Greeks called "the Egyptian bean" is not this bean, but the seed of the *Nelumbium speciosum*. The bean belongs among the five different kinds of seeds which the Emperor Chin-nong introduced into China in the year 2822 B. C. In Abyssinia bread is baked from the bean. Many varieties have already arisen in its culture.

Of the Lupines which grow wild throughout the whole Mediterranean region, *Lupinus hirsutus*, L., alone was cultivated by the Greeks under the name of *δέρμος*, and serves now in that country as food for cattle and the poorer classes of people, as it did the Cynics. The Mainots make use of it for food at the present day, and bake bread from it, for which reason they are called Lupinophagi. The Hindostan name, *Turmas*, and the Arabian, *Termis*, clearly indicate that this plant has been propagated from Greece to India and Arabia. At the present day it grows wild throughout the whole of the Mediterranean region, from Portugal and Algiers to the Greek islands and Constantinople.

The same is the case with *Lupinus albus*, L., the wolf bean, and *Lupinus termis*, Forsk., (Mediterranean plants); the first distributed throughout Italy, Sicily, and Thrace, to Southern Russia; the latter found in Sardinia, Corsica, Sicily, &c. Both are, at the present day, used almost exclusively as food for cattle. The latter, however, when cooked in salt water, and shelled, are eaten in Egypt. Both are cultivated in Italy, and the wolf's bean has been introduced into the Rhine country since the sixteenth century. The New World (in *Lupinus perennis*, L.) has also its wolf's bean, and its bitter seeds are eaten from Canada to Florida.

The lentil (*Ervum lens*, L., *φαχός* Diosc. and *φαχ*: of modern Greece) was known to the Greeks, Jews, and Egyptians, but has been only recently introduced into Bengal. This circumstance, and the fact that India has not cultivated this plant at an earlier period, indicate a more westerly native country, which may be fixed in Northern Caucasus and South Russia, for the reason that the lentil, besides being

cultivated, grows wild, and is also occasionally to be met with, run wild, throughout the whole of Europe.

The lentil of the present day serves the Bedouin for bread-fruit, and a variety (*Ervum lens* var. *abyssinica*, Hochst.) has originated upon the high plains of Abyssinia (5,000 to 8,000 feet.) Besides this one, several other varieties have been formed in the course of time.

The pea (*Pisum sativum*, L., *πίσον*, Theoph.), was in estimation as a culture plant even among the Greeks and Romans; in fact, its cultivation even in India goes back to a remote period, as is shown by its Sanscrit name, and the many more modern Indian names. The pea is found growing wild, at the present day, upon the hills of the Isthmus of the Crimea, and its native country was probably originally along the coast of the Black Sea. It was mentioned in the "*Capitulare de Villis*," (*Pisum mauriscum*,) and, at the present day, it has extended in various varieties to Hammerfest and Lapland. A similar distribution is to be assigned to the *Pisum arvense*, L. This species, at the present day, is cultivated more frequently than the preceding in Egypt, and has not remained unknown in India. Besides these, two species of pea may be mentioned—the Egyptian pea (*Pisum jomardi*, Schrank) and the Abyssinian pea (*Pisum abyssinicum*, Alex. Braun)—belonging chiefly to Africa, as also *Pisum maritimum*, L., and *Pisum ochrus*, L.; the former growing wild on the coasts of France, England, and Denmark, as far as Kamtschatka; the latter occurring in Italy, Portugal, Spain, and Crete, but used as an article of food only in times of famine.

The Chick-pea, (*Cicer arietinum*, L., *έρέβωθος*, Theoph.), is an important kind of pea to the East. The Jews, Greeks, and Egyptians cultivated it in ancient times, and it was also used as an object of devotion, at an early period, even in India, as is shown by the Sanscrit names. The common class of Greeks even now make use of it, both raw and roasted, during the winter months, and employ it as a substitute for coffee. It is also cultivated frequently, at the present day, in Egypt, as far as Abyssinia, and, according to Th. Kotschy, is one of the most generally distributed of cultivated plants on the heights of Lebanon as well as in Spain.

This plant is represented as almost growing wild in the Caucasian countries, in Greece, &c., and is also found run wild here and there in the fields of Middle Europe.

The Flat-pea (*Lathyrus sativa*, L.), is used more as a fodder-plant in the green condition, than for purposes of food.

Both the bean and the pea, as well as the chick-pea, were introduced into the model farm of Charlemagne; at present, they are distributed over almost the entire earth.

The Kidney bean was not unknown to the ancients; but it is scarcely possible to refer the different kinds to those of the present day. The Greeks cultivated *Phaseolus vulgaris*, L. (*δολιχος*), as well as *Phaseolus nanus* (*φασιολος*); and as these are only sparingly met with in eastern Asia, and as there is no Sanscrit name for them, it is probable that they were derived from Western, rather than from Eastern Asia.

At least a dozen different kinds of bean are cultivated in India, of

which several have their home in Southern China, in Cochin China, &c. There is no species of bean found growing wild at the present day in India.

Of the East Indian species of *Phaseolus* which are an object of cultivation, we may mention first *Phaseolus mungo*, L., the bean of which, with rice, constitutes the principal article of nourishment in the East Indies and in China. It is also cultivated in Egypt and Italy at the present day. A second species, *Phaseolus radiatus*, L., and *Phaseolus lunatus*, L., likewise very palatable, as also *Ph. tunkinensis*, Lour., of Cochin China; *Ph. max*, Roxb.; *Ph. calcaratus*, Roxb. of Mysor; *Ph. aureus*, Roxb. of Bengal; *Ph. torosus*, Roxb. of Nepal; and *Ph. acornitifolius*. The last is mostly used for feeding domestic animals.

Certain American species correspond to the Asiatic just mentioned; such as *Phaseolus coccineus*, Lam. (*Ph. multiflorus*, Willd.), *Phaseolus derasus*, Schrank, from South America, and *Phaseolus farinosus*, L. and *Phaseolus lathyroides*, L. from the West Indies. The former at the present day is even cultivated in Europe.

The genera *Dolichos* and *Lablab* may be mentioned next to *Phaseolus*, the former belonging chiefly to the New, the latter to the Old World.

The cultivated species of these are *Dolichos sesquipedalis*, L., from tropical America, *Dolichos glycinoides*, Kunth, of Peru and Chile, *Dolichos melanophthalmus*, D. C., the native land of which is unknown, and is now cultivated in Europe. *Dolichos sphaerospermus*, D. C., comes from Jamaica. *Dolichos unguiculatus*, Jacq., from Barbadoes.

The species of the Old World are *Dolichos sinensis*, L., indigenous to the East Indies, China, and Cochin China. *Dolichos catiang*, L., of the East Indies, and actually cultivated in Portugal and Italy. *Dolichos niloticus*, Delil. (*D. Sinensis*, Forsk.), and *Dolichos lubia*, L., of Egypt. Of the genus *Lablab* we may mention *Lablab vulgaris*, Sav. (*Dolichos lablab*, L.), introduced from Egypt to the East Indies, *Lablab nankinensis*, Sav., *Lablab leucocarpus*, Sav., *Lablab microcarpus*, D. C., *Lablab perennis*, D. C. Of all these, both the ripe seeds and the unripe fruit are used. *Soja hispida*, Monch. (*Soja japonica*, Sav.), or Soy, from Japan, is cultivated in Southern Asia and Europe.

What the previously mentioned legumens are to the colder portions of the earth the Ground nut (*Arachis hypogaea*, L.) is to the warmer zone. This plant was known neither to the ancient Egyptians and Arabians nor to the Greeks. The latter certainly did not understand this plant under the name of *αραχος*, which was probably a species of *Vicia*. It has been cultivated a long time on the west and east coast of Africa, and only quite recently introduced into the Mediterranean regions. A Hindostan name alone exists for it in Asia. In modern times only, it has been cultivated generally in China and Cochin China, which countries it has reached in some unknown way. On the other hand, six species of *Arachis* certainly belong to the *Flora* of Brazil, and the older authors also mention the cultivation of *Arachis hypogaea* under the name of *Mandubi*, *Anchie*, and *Mami*, on which account there is little reason to doubt its American origin. The thick tuberous seeds are frequently eaten raw, but are very palatable when roasted. The oil from it is excellent, and is much esteemed in India.

As I find no more convenient place for introducing those plants, which

on account of their nitrogenous constituents are particularly nutritious, although somewhat difficult of digestion, I bring them in at the end of the leguminous ones. I refer to the *fungi*, several of which, by proper preparation, surpass all other vegetable substance in palatability. Here, above all others, we may mention the Truffle, (*Tuber cibarium*, Pers.), a much praised subterranean fungus, varying from the size of a nut to that of the fist, and occurring chiefly in chestnut forests of Southern Europe, it was known even to the ancients (*ὄβρον*, Diosc.) To these may be added other species of truffle, such as *Tuber album*, Bull., and *Tuber griseum*, Pers., in Upper Italy, *Tuber moschatum*, Bull., in France, *Tuber niveum*, Desf., in Barbary, and one occurring in the Arabian deserts, of which Olivier makes mention. Of less importance are certain morel fungi, such as *Clavaria coralloides*, Bull., *Cl. botrytis*, Pers., *Cl. stricta*, Pers., *Cl. cinerea*, Bull., *Cl. rubella*, Schöff., *Cl. amethystea*, Bull., &c.; also *Helvella esculenta*, Pers., *H. monachella*, Frs., *H. crispa*, Frs., *H. ramosa*, Schöff., *H. elastica*, Bull., *H. infula*, Schöff., *H. mitra*, L., *Morchella esculenta*, Pers., *M. conica*, Pers., *M. bohémica*, Kromb., and *M. deliciosa*, Frs., *Hydnum repandum*, L., and some other species occurring abundantly in the European forests furnish only an unpalatable nutriment.

The genera *Boletus* and *Agaricus* are rich in esculent species. The most important of these are: the *Herrenplz* (*Boletus edulis*, Bull.), the *Kaiserling* (*Agaricus caesarius*, Schöff.), the common mushroom (*Ag. campestris*, L.), the *mousseron* (*Ag. mouceron*, Bull., *Ag. albellus*, Schöff.), the honey dove (*Ag. russula*, Schöff.), the *Reizger* (*Ag. deliciosus*, L.); as, also, *Agaricus palomet*, Thore (*Ag. virens*, Scop.), and the *Agaricus aurantiacus*, known to the Romans under the name *Boletus*, and always occurring in the chestnut forests of Southern Europe. It is this species which Nero called "*cibus desrum*," food of the gods.

Of less importance, although frequently used as food, are *Agaricus procerus*, Scop., *Ag. alutaceus*, Pers., *Ag. sapidus*, Poir., *Ag. esculentus*, Pers., *Ag. aureus*, Pers., *Ag. virescens*, Pers., *Ag. amethysteus*, Bull., *Ag. anisatus*, Pers., *Ag. tigrinus*, Bull., *Ag. infundibuliformis*, Bull., *Ag. nebularis*, Batsch., *Ag. aromaticus*, Roques, *Ag. tortilis*, Bull., *Ag. violaceus*, L., *Ag. hamatochelis*, Bull., *Ag. ostreatus*, Pers., *Ag. subdulcis*, Pers., *Ag. lactifluus aureus*, Pers., *Ag. virgineus*, Jacq., *Ag. eburneus*, Bull., *Ag. auricula*, Dub., *Ag. eryngii*, D. C., *Ag. ovinus*, Bull., *Ag. aquifolii*, Pers., *Ag. ilicinus*, D. C., *Ag. virgineus*, Batsch., *Ag. frumentaceus*, Bull., *Ag. castaneus*, Bull., *Ag. cortinellus*, D. C., *Ag. caudicinus*, Pers., *Ag. sambucinus*, Cord., *Ag. attenuatus*, D. C., *Ag. rubescens*, Corda, *Ag. solitarius*, Bull., *Ag. ovoideus*, D. C., *Ag. leiocephalus*, D. C., *Ag. vaginatus*, Bull., *Ag. incarnatus*, Pers.; as, also, *Boleius cereus*, Bull., preferred by many to the mushroom, *B. scaber*, Bull., *B. aurantiacus*, Bull., *B. hepaticus*, D. C., *B. carinthiacus*, Jacq., and *Polyporus ovinus*, Schöff. We may mention, in conclusion, the egg-sponge, or Pfiffering (*Cantharellus cibarius*, Frs.) Besides these fungi belonging particularly to Europe, there are other regions of the world which are not without palatable representatives of this branch of the vegetable kingdom. Among these, I may mention a few, such as *Boletus moschocaryanus*, Rumph, Herb. Amb., 6, 9, 19; *B. saguarius*, Rumph, and *Polygaster sampadarius*, Frs.; the