History of Bible Plants

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Preface

During my long official connection with the Royal Botanic Gardens, Kew, I was often appealed to by visitors and others for information respecting the plants of the Bible, some requesting to be shown the *shittim, sycamore*, and *sycamore* trees, the *Rose of Sharon, sweet-smelling camphire*, and so more, they, at the same time, saying that they were well acquainted with the plants growing in parks and gardens in this country known to them by the same names as those given in the Bible. They were, however, much surprised when told that many, such as *hyssop, balm, myrrh, Lily of the Valley, tares, nuts, apple, and chestnut* trees, spoken of in the Bible, were quite different from the plants known by those names in this country.

The number of names of plants, and of plant products, mentioned in the Bible, amounts to about one hundred;

and in the authorized version, their Hebrew names, with few exceptions, have been translated into English names. Many of them have been correctly identified with those of the present day, and, as already stated, some differ; while a few cannot be identified with any degree of certainty. This is, no doubt, partly due to the original translators not having been sufficiently acquainted with the plants of Palestine and Greece, so as to enable them to correctly translate the Hebrew names of the Palestine plants into the Greek names of the same plants; and it may readily be supposed that mistakes have occurred in translating the Greek and Latin into English. The difficulty is increased by the same Hebrew word, in many cases, being applied to different plants; or different Hebrew words to the same plant: for instance, six words have been translated *Oak*. The identification, however, has been greatly assisted by its having been found that many of the modern Arabic names are the same, or nearly the same, in spelling and sound as the original Hebrew.

Several of the Bible Plants are described by early Greek and Roman writers, of whom may be specially mentioned Herodotus, who wrote 413 B.C., Aristotle, 332 B.C., Theophrastus, 288 B.C., and Dioscorides, Pliny, and Josephus in the early part of the first century. Their descriptions are, however, in some cases vague, and the plants cannot be identified with any degree of certainty.

As might be expected, many works have been written on the plants of the Bible, to describe which would occupy much space, and be of little service (otherwise than historical) to the students of Bible history. The following, however, require to be specially noticed, as they embody the opinions of the principal modern commentators and

botanists on the identification of Bible plants with those of the present day.

The first work of importance, entirely devoted to the subject, is that of Professor Celsius, of Upsala, entitled "Rierobotanicon," published in 1745. It is said that he occupied fifty years in making researches on the subject. In this work he endeavors to determine the identity of the doubtful plants; at the present day, however, his conclusions are not all accepted as correct. This may be partly ascribed to the more correct observations and writings of the numerous travelers, both divines and naturalists, who have visited Palestine since his time, of whom Hasselquist, Buckhardt, Buckingham, Shaw, Kirby, Spence, Kitto, Robinson, Hooker, Broomfield, Stanley, Thomson, Tristram, and Hayne are the principal. This has resulted in the publication of several important works during the present century, some entirely restricted to plants, while others also embrace other Bible subjects. Of the latter class the most important of modern times is the "Pictorial Bible," by Dr. Kitto, published in 1836, a work in three thick quarto volumes, containing the complete Bible text, with explanatory notes to the special subjects of nearly every chapter, and illustrated with many hundred woodcuts. He makes long comments on some of the plants, especially as regards their identification; his conclusions, however, cannot in all cases be relied on.

The next and first important work, devoted exclusively to an account of the plants of the Bible, is the "Scripture Herbal," by Maria Callcott, published in 1842. It is a handsome octavo volume of 544 pages; in this work one hundred and twenty-four plants are described, each illustrated by a wood cut. The authoress has taken much pains in comparing the names of the plants in our version

with the corresponding names in the versions of other languages. This has, in a few cases, assisted in removing doubts, but, unfortunately for the credit of the book, plants have been adopted as the same as those spoken of in the Bible, which in several cases are not natives of Palestine.

In 1861-63 appeared Dr. Smith's "Dictionary of the Bible," a work in three large octavo volumes, the compilation of which was accomplished by the united labors of between fifty and sixty clergymen and professors of Hebrew, Greek, Arabic, and other languages. The subjects are arranged in alphabetical order. With regard to the botany, the identification of the plants is entered upon at great length, and much erudition is bestowed in attempting to reconcile the Hebrew, Greek, and Arabic names with some special plant, and, in many cases, the result is, no doubt, correct.

This work was followed by the "Natural History of the Bible," published in 1868, by the Rev. H. B. Tristram, who had spent some time in Palestine. It is a work of 518 pages, and contains an account of the Physical Geography, Meteorology, Zoology, and Botany of Palestine, the latter occupying 163 pages. Being a good botanist, his conclusions regarding the plants may, in most cases, be depended on.

Another work has lately been published, entitled the "Bible Educator," edited by the Rev. E. H. Plumtre. It is a work of 1,336 pages, in four quarto volumes, illustrated by numerous woodcuts; the botanical part being by Mr. W. Carruthers, Keeper of the Botanical Department of the British Museum. He has given a brief view of the flora of Palestine, and specially notices the plants mentioned in the Bible. His position has enabled him to carefully examine the stores and antiquities in the British Museum, the result

of which has been to add some new matter regarding several of the Bible plants.

With these modern standard works before us, it may be questioned what necessity there is for writing the present volume. My reason for doing so is that, with the exception of Canon Tristram's "Natural History," the others are expensive, and beyond the reach of the great body of readers interested in any special subject of Bible history, such as its plants.

Having long studied the Bible plants, and with one or two exceptions the whole being known to me in a living state, I was led to draw up a brief historical account of each, which was intended to form part of my work, entitled "Domestic Botany," published in 1871. It was found, however, that to do full justice to the subject, would have increased the size of the volume much beyond what the publisher considered desirable. Since then I have collated and revised the whole, which, with additional matter containing my own views on many of the subjects, now forms the present volume, consisting of a brief account of each plant and plant product, with remarks on the evidence upon which commentators have founded their opinions respecting their identification with the plants of the present day.

On considering that many Bible history readers may not possess much knowledge of botany, I have avoided giving lengthy, botanical descriptions of the plants, merely saying sufficient to convey an idea of their nature, with the English and botanical names of each, the family to which each belongs, their native countries, and their principal uses, ancient and modern; also, in order to identify them as Bible plants, I have given their Hebrew names, which

have been chiefly derived from Smith's "Dictionary" and Tristam's "Natural History" above mentioned.

The object of the volume is to assist in imparting a knowledge of the plants of the Bible to those who have not the opportunity of perusing these works, and are not learned in Hebrew, Greek, and other languages. I trust that the clergy, readers and teachers of Bible history in general, may find it a convenient handbook of reference, and that it may prove a useful guide to those who visit Palestine, and take an interest in its flora. It is much to be wished that those who write a history of their travels should have a knowledge of the principal characters of the natural families of plants, so as to avoid giving wrong names and vague descriptions that render it difficult for the botanist to determine what plant is meant.

As many of the Bible plants are common and well known, I therefore deem it sufficient to select only a few of the more special for illustration by figures, which have been carefully drawn and lithographed by Mr. W, Fitch, the well-known botanical artist.

In conclusion, I have to thank Sir Joseph Hooker, Director of the Royal Gardens, Kew, for the loan of books on the subject.

I have further to state that, in consequence of my failure of sight, the whole of the manuscript has been written from my dictation, but it has, as well as the proof sheets, been carefully read over and corrected by Mr. George Nicholson and Mr. John R. Jackson, both holding official appointments in the Royal Gardens, Kew.

JOHN SMITH. KEW, *December,* 1877.

Introduction

The vegetable kingdom or flora of the earth is first alluded to, under three heads, as we read in Genesis 1:11: "And God said, Let the earth bring forth grass, the herb yielding seed, *and* the fruit tree yielding fruit after his kind, whose seed *is* in itself, upon the earth: and it was so." These three heads comprise all the different forms, sizes, and natures of the organized bodies that grow upon the earth and in its waters, and which in the second chapter of Genesis are collectively called "plants." We further read "Behold, I have given you every herb bearing seed which *is* upon the face of all the earth, and every tree in the which *is* the fruit of a tree yielding seed; to you it shall be for meat."

For nearly the first two thousand years of man upon the earth, we have no information as to what were the kinds of plants that furnished his food; we, however, read that Cain

was a tiller of the ground, and in process of time he brought of the fruit of the ground an offering unto the Lord. What kind of fruits these were we have no knowledge. After the flood we read that Noah planted a vineyard and made wine; the vine, therefore, is the first recorded cultivated plant, but it may be readily inferred that besides the vine some kind of corn or pulse was cultivated, as "fine meal," "bread," and "cakes" are spoken of in the time of Abraham, and "lentils" and "wheat" in the time of Jacob. After this we find barley, rye, millet, beans, pulse (chick pea?), figs, pomegranates, nuts, and several herbs mentioned.

The above are the food plants recorded in the books of Moses; flax being the only plant mentioned as used for clothing and woven fabrics for other purposes. Moses also speaks of several spicery or perfume plants, all of which are noticed in their respective places in the following pages.

The next important notice of plants, in the Bible, is that king Solomon "spake of trees, from the cedar that is in Lebanon to the hyssop that springeth out of the wall," by which it is reasonable to infer that he had all plants that came under his observation cataloged and classified, and must therefore be considered the first systematic botanist.

He was also a great patron of Horticulture as we read "I made me great works; I builded me houses; I planted me vineyards; I made me gardens and orchards, and I planted trees in them of all kinds of fruit; I made me pools of water to water therewith the wood (nursery) that bringeth forth trees."

Unfortunately we have no record of Solomon's botanical knowledge of the plants of Palestine and all trace of his gardens appears to have been early lost, except that we

learn from Josephus that in his time the balm plantations at Jericho were still in existence.

After Solomon the principal mention of grass, herbs, and trees is in the books of the prophets, and afterward in the New Testament, either as articles of trade or more often in a figurative, symbolical, or emblematical sense, but it is questionable whether all were practically acquainted with the plants they spoke of, especially those that grew on Lebanon.

The above is a brief notice of the authority for our knowledge of the names of the plants mentioned in the Bible, of which there are about one hundred, and, with the exception of about a dozen, they are all natives of Syria, especially the western part called Palestine, familiarly known as the Holy Land. The following is a brief account of its extent and aspect, climate and chief features of its flora.

It is the most western part of Asia, consisting of a narrow strip of country, situated on the eastern shores of the Mediterranean, between the latitudes of about 30° 40' and 33° 36' North. Its breadth varies much (consequent on the bays and promontories on the Mediterranean coast) in the north not exceeding twenty miles, while in the south it measures fifty. This width includes the country between the sea and the river Jordan. Its length from north to south is about one hundred and forty miles.

This is true Palestine, but the kingdom of Tire with Mount Lebanon in the north, and the countries of Gilead and Moab, East of the Jordan and Dead Sea, are now also included under the name of Palestine. These increase the length to about one hundred and eighty miles, and the breadth on an average of about fifty to sixty-five.

It is bounded on the West by the Mediterranean, on the east by the mountainous countries of Gilead and Moab, on the north by Mount Lebanon, on the south-east by Mesopotamia and the Desert of North Arabia, and on the south-west by the Desert of Paran or the Desert of the Wanderings bordering the eastern shores of the Red Sea, and the peninsula of Sinai stretching southward, on which stands the historic Mount of that name.

The country varies considerably in aspect, but it will be sufficient for our purpose to notice only a few of its principal features.

It is traversed in a nearly north and south direction by two ranges of mountains, having very irregular outlines and varying considerably in elevation, enclosing between them a long narrow fertile valley, through which runs the river Jordan. The range nearest the Mediterranean is called the Lebanon Range, and in the north commences with Mount Lebanon, which rises to the height of 10,200 feet, and is snowcapped the greater part of the year. In some places lower down the limestone cliffs add to its white aspect. Its western base approaches within a few miles of the Mediterranean. Southward from Lebanon the range varies considerably in height, and includes the hilly country of Galilee. The range gradually decreases in elevation southward, then again rises and includes the hilly country of Samaria and Hebron, terminating in the desert near Gaza. Much of the country between this range and the sea consists of slopes and fertile plains, as the Plains of Phœnicia in the north, containing the cities of Tire and Sidon, and in the south the great Plains of Esdraelon, Acra and Sharon, which are separated by lateral spurs of

the main range jutting out towards the sea, Mount Carmel being conspicuous.

On the east of Mount Lebanon commences the eastern range, called Anti Lebanon, its highest peak being Mount Hermon which rises to the height of 9,800 feet, and like Lebanon is snow-capped. This range extends southward including the countries of Bashan and Gilead, terminating in the elevated table land of Moab, east of the Dead Sea.

The average height of both ranges, exclusive of the peaks, is 1,500 to 1,800 feet. In general they are broken and rugged in the extreme, consisting of ravines, deep fissures, precipices, and towering rocks. Some parts of the eastern range are evidently volcanic, as shown by the rents and cracks in the once molten, now hardened lava, which at some remote period poured over that region. On being viewed from the west, much of it has the appearance of a continuous cliff or wall.

Several large rivers have their sources in the north of Anti-Lebanon; the most important being the Jordan, Orontes, Leontes, Abana, and Pharphar. The two latter and other smaller streams rising further south flow east of Anti Lebanon, and after fertilizing the valleys and plains, including those of Damascus, end their course in the marshy lakes and swamps of the desert. The Orontes takes a northward direction, and after a winding course of one hundred and fifty miles, flows round the north of Lebanon, through the plains of Antioch, and then turning westward falls into the Mediterranean Sea. The Leontes flows westward, and after a winding course of eighty miles, partly through rocky chasms, enters the Mediterranean four miles north of Tire.

The Jordan rises from several sources, which unite and enter the great morass of the Hûleh whose southern extremity becomes a Lake, from which the Jordan issues: after leaving the Lake its current is sluggish, but soon becomes rapid, and after a course of nine miles, and having a breadth of seventy feet, enters the north end of the Lake of Gennesareth (also called the Sea of Galilee or Lake of Tiberias). It is of an oval shape, thirteen to fifteen miles in length, and six to seven in breadth; its surface being 700 feet below the level of the Mediterranean. The Jordan issues from the south end of the Lake, and after a winding course of two hundred miles, within an area four to five miles in breadth, enters the Dead Sea sixty miles south of Gennesareth: during its winding course its width varies considerably, some places being seventy, others eighty yards, until its junction with the Dead Sea, where it is much wider. This is an inland salt water lake, forty-two miles in length, and twelve to sixteen miles in breadth, its surface being 1,292 feet below the not far distant Mediterranean. The Jordan thus flows between the Lebanon and Anti-Lebanon ranges of mountains, through a gradually deepening valley which may be likened to a chasm cut out of the earth.

Many small rivers rise from the sides of these two mountain ranges, and fertilize the valleys, falling into the Jordan or Dead Sea, the principal of which are the Jarmouk, the Jabbok, and the Arnon. Besides these, about a dozen rise in the western range, and fall into the Mediterranean, but some of them can only be called winter torrents, the principal being the Kishon, which drains the hill country surrounding the plain of Esdraelon.

As might be expected, considerable diversity of climate prevails, which is shown by the varied nature of its flora in

different localities. At Jerusalem, which is situated in 31° 47' north latitude, at an elevation of 2,610 feet above the level of the Mediterranean, from which it is distant thirty-two miles, snow occasionally falls, and sometimes remains on the ground for a week or more. Ice is, however, seldom seen. Arabian poetry says Mount Lebanon bears winter on his head, spring on his shoulders, and autumn on his breast, while summer lies sleeping at his feet.

Although the greater part of the higher mountain ranges are destitute of vegetation, they nevertheless in other parts are densely covered with forests consisting of different kinds of oaks, firs, and terebinth trees.

The forests of Lebanon consist of the famed "Cedar of Lebanon," *Pinus halepensis, Juniperus excelsa, Cupressus sempervirens,* Walnut, Plane, Maple, different kinds of oaks, also the common Juniper, Hawthorn, Dog-rose, Dwarf elder, Ivy, Butcher's broom, Berberry, Honeysuckle, Jasmine, Cotoneaster, Rhododendron ponticum, the Strawberry tree, *Erica vagans* and *E. orientalis*, the two latter being the only representatives of that extensive genus in Western Asia. At 7,000 feet and upwards the shrubs consist of spiny bushes, such as Poterium spinosum, Astragalus Tragacantha, and others.

The lower rocky valleys and plains of both the Lebanon and Anti Lebanon ranges are covered with numerous shrubs, consisting of *Oleander, Arbutus, Oistus,* wild roses, brambles, and the like; also the Myrtle, Caper bush, Jujube, *Styrax,* Carob tree, Pistachio nut, Pomegranate, Almond, and the Apricot; Fig trees cling to the rocks; Mulberries are cultivated in rows on step-like terraces; the vines are trained along the narrow ledges, and dense groves of olives occupy the lower parts of the glens. The Date palm, once

abundant about Jerusalem and Jericho and the regions of the Dead Sea, is now a thing of the past, as it also is in the once fertile plain of Engedi, famed in the time of Solomon for its palms, vineyards, and balsams, now only solitary trees being occasionally met with.

Numerous kinds of herbaceous plants are common throughout the whole country, such as *Anemones, Ranunculuses, Arums, Irises,* and *Lilies,* and, the different kinds being generally gregarious, present a splendid appearance during their respective flowering seasons. This brilliant scene is, however, soon over, the scorching rays of the summer sun withering up the bright flowers and imparting to the soil a degree of apparent sterility. Poplars, willows, reeds, and rushes grow by rivers, brooks, and marshes; and weeds, such as Poppies, Charlock, Cockle, Centaurea, Bluebottle, Thistles, Scabious, Docks, and many others are pests in cultivated grounds, as in this country.

Consequent on the depression of the Jordan Valley, and partly on account of latitude, the climate in the region of the Dead Sea may be called tropical, and favors a most luxuriant and in some parts jungle vegetation, such as that formed by the reed *Arundo Donax,* which represents the bamboo of India. About one hundred species, typical of the flora of Arabia and India, are here found, one of the most special being *Salvadora indica*, a small tree, supposed by some writers to be the mustard tree of Scripture; also *Calotropis procera*, which forms thickets of low trees. *Acacia Farnesiana* is abundant, and, besides being remarkable for the fragrance of its beautiful yellow flowers, is rendered conspicuous by a species of *Loranthus, L.* acacia growing as a parasite on it. This, when in flower, gives the tree the appearance of being on fire. On the saline plains grow

Atriplex Halimus, Chenopodiums, Mesembryanthemums, Salsolas, Salicornias, Tamarisks, Statices, and other stiff rigid plants common to the sea coasts of the Mediterranean, and some of them of Britain.

The cultivated valleys and plains yield abundant crops of corn, pulse, fruits, and vegetables; even in the hilly countries of Bashan and Gilead every available spot is cultivated, corn fields being found at high elevations. There are, however, many extensive barren tracts of country that may be termed desert, which in early times appear to have been cultivated.

In recent years the principal fruits of Europe have been introduced, as also many useful domestic plants of India and other countries, including the Banana, which ripens as far north as Sidon.

Although no complete general flora of Palestine and Western Syria has been published, yet, according to the discoveries of botanical collectors and travelers, the number of species is estimated to amount to nearly three thousand, of which the names of nearly two thousand five hundred are recorded in a manuscript catalog in the Herbarium library of the Royal Botanic Gardens, Kew.

A work is now in progress entitled "Flora Orientalis," by Professor Boissier, of which three volumes have appeared, and a part of the fourth. It describes the plants of Greece, Syria including Palestine, Caucasus, Taurus, Persia, Afghanistan, and others, and their local geographical distribution; by this work we find that there are but few plants peculiar to Palestine.

In 1860 Dr. Hooker spent some time in Palestine, and in Smith's "Dictionary of the Bible" gives a very interesting and general view, of its present flora. He says the Botany

of Syria and Palestine differs but little from that of Asia Minor, which is one of the most rich and varied on the globe. What differences it presents are due to a slight admixture of Persian forms on the Eastern frontier, of Arabian and Egyptian on the Southern, and of Arabian and Indian tropical plants in the low torrid depressions of the Jordan and Dead Sea. The main features of the flora are essentially Mediterranean, European, and not Asiatic. A vast proportion of the common arborescent and frutescent plants are identical with those of the South of Europe and belong to genera of the British, Germanic, and Scandinavian Floras. About 500 species are common to Great Britain and Palestine. This number includes all the principal large trees, with the exception of the Beech, Lime, Birch, Holly, and Yew; and the exotic Sweet chestnut, Larch, Spruce, and Horse chestnut.

Of grasses there are about one hundred and fifty species, including nearly all the natives of Britain, the principal exceptions being *Arundo Donax, Saccharum eegyptiacum,* and *Erianthus.Ravenna*;, which are large growing, cane-like grasses. *Cyperacew* is poorly represented, but contains what Dr. Hooker calls "the most memorable plant of this region, or indeed of the whole world," the paper reed Papyrus antiquorum, which grows in the extensive marshes contiguous to the Lake of Galilee and other parts.

The cryptogamic flora of Palestine is as far as known, not rich, about a dozen ferns only being recorded; *Polypodium vulgare, Cystopteris fragilis, Nephrodium pallidum,* and *Polystichum angulare* grow on Mount Lebanon; *Adianturn capillus veneris, Cheilanthes fragrans, Clymnograrn,ma leptophylla, Ceterach oficinarum, Pteris lanceolata, Asplenium Adiantum-nigrum,* and *Selagiuella* are found in different

parts of the country. One peculiarity that may be noticed is that the most cosmopolitan and abundant of all ferns, the common Brake, *Pteris aquilina* is not recorded as being a native of Palestine. The above, I trust, will be sufficient to convey to the reader an idea of the nature of the country of Palestine and its flora, of which many species have from time to time been introduced into this country, some, such as the Cedar of Lebanon, *Pinus halepensis, Juniperus excelsa*, three species of Oak, Walnut, Mulberry, Fig, Judas Tree, Syrian Rose, and many herbaceous plants flourish in the open air, whilst others, such as the terebinth, Pistachio nut, Carob tree, Pomegranate, Myrtle, Oleander, Caper, Storax, Olive, and the Paper reed are not sufficiently hardy to withstand the cold of severe winters without some kind of protection. Many of them may be seen in the conservatories of the Royal Botanic Gardens at kew, and in other public collections in this country.

Bible Plants

Plants, of which above one hundred thousand different species are now known to botanists, are classified according to their relationship to one another in groups termed Natural Orders or Families, of which there are about three hundred. As the Bible plants form part only of about fifty of these families, and as they would be far apart if placed in their respective positions in the general arrangement, I deem it best to follow the original Bible classification of *grass, herbs,* and *trees;* by so doing, the allied modes of growth and products are brought together better than by either a scientific or alphabetical arrangement.

Each subject is headed by its English and Hebrew names, followed by a quotation of the verse or verses in which it occurs in the Bible, the subject under consideration

being printed in *italics*, in some cases being followed by its Hebrew name in a parenthesis.

Division 1. - Grass. (Heb., Desher)

This Division contains corn, grass, reeds, canes, rushes, and flags.

"And God said, Let the earth bring forth grass" Gen. 1:11; 4000 B.C.

The word grass occurs forty-eight times in the Bible, in the greater number of cases the application being figurative, and symbolical of early withering, decay, and death; its most important practical use was for fodder for cattle. One of the Hebrew words for grass (yered) means green, and seems to be a general term for all herbage growing in fields and meadows, fit for the food of cattle.

In Botany the term grass is restricted to a family of plants termed Gramineœ, of which there are about 4000

different species known to botanists. More or less of that number are to be found in all regions of the earth suited to plant life, varying in size from a few inches to that of the lofty bamboo, and including all kinds of corn, reeds, and sugar cane. About 150 are natives of Palestine, many of which are common to the south of Europe and this country.

Grasses may well be called the carpet of the earth, as they closely occupy vast tracts of the earth's surface, both on plains and mountain slopes. They are the most important of all plants to man, furnishing him with bread, and food for his flocks and herds.

Corn (Heb., Dagan, Growing Corn)

Other Hebrew words are applied to corn in its different states.

"Therefore God give thee of the dew of heaven, and the fatness of the earth, and plenty of *corn* and wine." - Gen. 27:28; 1760 B.C. "And, behold, seven ears of *corn* came up upon one stalk." - Gen. 41:5; 1715 B.C. "And all countries came into Egypt to Joseph for to buy *corn."* - Gen. 41:57; 1708 B.C.

Corn is a general name for various plants of the grass family, which, according to their nature, have been cultivated in different regions of the earth from time immemorial, their seed, grain as it is generally called, furnishing the bread food of man. That corn was important to man in early times as it is now, is evident from its being spoken of no less than seventy-one times in the Bible. Although it is first mentioned in the above three quotations, it may nevertheless readily be believed that the cakes made of fine meal presented by Abraham to the three angels were made of some kind of corn. (Gen. 18:6.) In this country, corn is represented by wheat, barley, oats, and rye; and in warmer

countries by Indian corn or maize, Guinea corn, rice, and other large-seeded grasses. "The principal kinds of corn growing in Palestine at the present day are wheat, barley, spelled, millet, and *dhurra* or Guinea corn (Sorghum vulgare).

In Leviticus 23:14, parched corn is mentioned, for which, see "Parched Corn."

Parched Corn (Heb., Kali)

"And ye shall eat neither bread nor *parched corn,* nor green ears, until the selfsame day that ye have brought an offering unto your God." - Lev. 23:14; 1490 B.C. "And she sat beside the reapers: and he reached her *parched corn,* and she did eat and was sufficed." - Ruth 2:14; 1312 B.C. "And Jesse said unto David, his son, Take now for thy brethren an ephah of this *parched corn,* and these ten loaves, and run to the camp to thy brethren." - 1 Sam. 17:17; 1063 B.C. Parched corn is also mentioned in 1 Sam. 25:18; 1060 B.C.; and again, 2 Sam. 17:28.; 1023 B.C. In the latter verse parched pulse is also mentioned (see "Pulse").

Parched corn forms an article of food in Palestine at the present day, and Dr. Thomson describes it as being thus prepared, "A quantity of the best ears (of wheat), not too ripe, are plucked with the stalks attached; these are tied into small parcels, a blazing fire is kindled with dry grass and thorn bushes, and the corn heads are held in it until the chaff is mostly burned off." When sufficiently roasted, the grain is "rubbed out in the hand," and is a favorite article of food all over the country. Corn is also prepared by being first boiled, then bruised in a mill to take the husks off, afterward dried in the sun, and then stored for use.

Barley (Heb., Scorah)

"And the flax and the *barley* was smitten; for the *barley* was in the ear, and the flax was bolled." - Exod. 9:31; 1491 B.C. "An homer of *barley* seed shall be valued at fifty shekels of silver." - Lev. 27:16; 1491 B.C.

Barley is the corn grain (seed) of *Hordeum distichum,* an annual plant of the grass family, which has been extensively cultivated from time immemorial in the temperate regions of the Northern Hemisphere in the Old World. It is one of the principal corn foods of man. Thirty-two passages in the Bible refer to it, either as a plant growing in the fields or to its use as barley meal, barley bread, barley cakes, and barley loaves (John 6; 9; 13). This shows it was extensively cultivated as food in early times in Palestine, and there is no doubt but that the plant then cultivated was the same as that now grown.

In Palestine and other countries barley bread forms a great part of the food of the poor. In this country it is but little used. Barley is, however, grown chiefly for turning into malt, from which, by fermentation and distillation, ale and spirits are obtained. As no mention is made of its intoxicating qualities in the Bible, it is reasonable to suppose that its properties in that respect were not then known.

In 1 Chronicles 11:13, we read "where was a parcel of ground full of *barley.*" It is supposed that the word *barley* in this verse should read *lentils,* as rendered in 2 Sam. 23:11 (see "Lentils"). In this country two kinds of barley are generally cultivated; one called the four-rowed barley or Bere, the other six-rowed.

Wheat (Heb., Chittah)

"And Reuben went in the days of *wheat* harvest, and found mandrakes in the field." - Gen. 30:14; 1747 B.C.

"But the *wheat* and the rie were not smitten." - Exod. 9:32; 1491 B.C. "For the Lord thy God bringeth thee into a good land … a land of *wheat* and barley." - Deut. 8:8; 1451 B.C. "And Solomon gave Hiram twenty thousand measures of *wheat* for food to his household." - 1 Kings 5, 11; 1014 B.C.

Wheat *(Triticum vulgare),* is a well-known annual grass, extensively cultivated from the remotest times in Egypt and other countries of the East. Grains of wheat having been found, along with flint implements, in the remains of the Lake cities of Switzerland show that it must have been cultivated even in prehistoric times. It is now spread over all the temperate regions of the earth, and supplies the staff of life to millions of people. Palestine is famed of old as being "a land of wheat and barley," and even at the present day considerable quantities of wheat are exported from its Levantine ports. The cakes ordered to be made of "fine flour" for the shewbread, in Leviticus 24:5, were no doubt of wheaten flour.

Rye (Heb., Cussemeth)

"But the wheat and the *rie* were not smitten: for they were not grown up." - Ex. 9:32; 1491 B.C. "When he hath made plain the face thereof, doth he not cast abroad the fitches, and scatter the cummin, and cast in the principal wheat and the appointed barley and the *rie* in their place?" - Isaiah 28:25; 725 B.C.

Rye *(Secale cereale)* is a corn grass extensively cultivated in many parts of Europe. Its grains are similar to barley and wheat, and in many parts form the principal corn bread of the people. As it is but sparingly cultivated in Egypt or Syria, it is supposed that the rye mentioned above was *Triticum Spelta,* called spelled, a hard-grained wheat, in

common cultivation in these countries at the present time, as it was in Egypt in the time of Moses.

Rye is subject to a disease called "ergot," caused by a microscopic fungus, which attacks one or more of the grains in the ear while young, causing it to swell into a substance very different from that of the grain, being solid and of a fatty nature, generally in the form of a spur, sometimes an inch or more in length: hence the name "spurred rye." The spur is very poisonous, and, in Germany and other parts of Europe, where rye-bread is much used, being ground with the meal, causes incurable gangrenous diseases. It is, however, a valuable medicine in the hands of the medical practitioner.

Tares (Greek, Zizania.)

"But while men slept, his enemy came and sowed *tares* among the wheat." - Matt. 25-30; 31 A.D.

In the English version of the New Testament the Greek word *zizania* is rendered *tares,* but it must be understood that the plant called tares in this country, *Vicia sativa,* a kind of vetch cultivated for feeding cattle, is not the tares spoken of in the above verse, the latter being *Lolium temulentum,* a strong-growing grass resembling rye or wheat, from which in its early growth it cannot well be distinguished. If not eradicated early, but left till the harvest, it is cut with the wheat, is then difficult to separate, and of course, more or less, is ground with the wheat.

It is one of the very few deleterious grasses, and there are many instances on record of its serious effects; even death being caused by eating bread containing darnel. Its poisonous properties were well known to Theophrastus and other Greek writers, and Gerard, in his "Herbal," says "The new bread wherein darnel is, eaten hot causeth

drunkeness," hence in some books it is called "drunken darnel." It is also said to cause blindness.

The word *Zizania* has been given by Linnaaus as the generic name of a North American grass, *Z. aquatica,* called water rice, the grains of which form a considerable article of food in Canada.

Millet (Heb., Olochan)

"Take thou also unto thee wheat, and barley, and beans, and lentiles, and *millet,* and fitches, and put them in one vessel, and make thee bread thereof." - Ezek. 4:9; 595 B.C.

Millet is the seed grain of several kinds of grasses, the most important being *Sorghum vulgare.* This is a strong growing, cane-like grass, attaining the height of four, five, or more feet, and producing a crowded head of spikelets six to eight inches in length, forming a dense head of small corn grains, which are ground into meal for making bread. It appears to have been cultivated in Egypt in early times, as verified by grains and representations of the plant being found in the ancient tombs.

It is much grown at the present day in the south of Europe, and in the regions of the Mediterranean generally, also in Egypt, Syria including Palestine, India, and many other countries, and is known by the names of *dhurra, danna,* and Guinea corn. Its cultivation has been several times attempted in this country; and, like Indian corn, it flowers luxuriantly, but the summers are too cold to ripen the grains of either.

The spikelets forming the head become very rigid, and after the removal of the grain, are used for making brushes, whisks, and brooms. They are extensively imported to this country for that purpose. As Millet was cultivated in Egypt in the time of Moses, it is quite probable that the

spikelets were then in use, and that they formed the bunch of Hyssop.

Panicum miliaceum and *P. italicum* are also called Millet; they are strong growing, broad-leaved, annual grasses, producing a dense head of grains, smaller than those of the preceding. They are largely grown in many parts of Europe as bread plants, and also for feeding poultry. The generic name, Panicum, means bread.

Straw, Stubble

"We have both straw and provender enough." - Gen. 24:25; 1857 B.C. "Ye shall no more give the people straw to make brick." "So the people were scattered abroad throughout all the land of Egypt to gather stubble instead of straw." - Ex. 5:7,12; 1491 B.C. "And Moab shall be trodden down under him, even as straw is trodden down for the dunghill." - Isa. 25:10; 712 B.C.

The stalks of all kinds of corn, after being thrashed, are familiarly known by the name of straw, and the stalks of the different kinds of pasture grass, when dry, form hay. Both are termed provender, and are used for feeding and littering cattle. In time this is trodden down for the dunghill; it then becomes manure, and enriches the soil for again reproducing the original elements, straw and hay.

The discovery of ancient Egyptian bricks, shows that in their formation chopped straw was mixed with the clay, seemingly for the purpose of giving to it a greater cohesion. Other substances were also used, such as the stalks of clover or similar plants, of which, leaves have been found in the bricks.

Stubble is that part of the stalks of corn left in the ground after the corn is cut, and generally does not exceed a few inches in height.

Hay (Heb., Chatzir)

"The *hay* appeareth, and the tender grass showeth itself." Prov. 27:25; 700 B.C. "The *hay* is withered away, the grass faileth, there is no green thing." - Isa. 15:6; 726 B.C.

The word *hay* in these two verses seems to indicate the grass in a growing state, and not in the state of hay as so called in this country; and, according to Tristram, the drying and stacking of grass is not practiced in Palestine.

Chaff

"Like the *chaff* which the wind driveth away." - Psa. 1:4.

Chaff is the husk which surrounds the grains in the ears of corn. The chaff is separated from the grain by threshing and winnowing. The word occurs thirteen times in the Bible, but the above is sufficient to show that it is a worthless substance, being in most cases spoken of as easily driven by the wind or destroyed by fire.

In this country it is not altogether useless, as by some it is substituted for feathers or other material for stuffing beds.

Calamus (Heb., Keneh Bosem)

"Take thou also unto thee… of sweet *calamus* two hundred and fifty shekels." - Exod. 30:23; 1491 B.C. "Spikenard and saffron; *calamus* and cinnamon." - Cant., 4:14; 1014 B.C. "Cassia, and *calamus,* were in thy market" - Ezek. 27:19; 588 B.C.

Admitting that the above named spices were produced by the same plants, as known by their respective names at the present day, and as they are not natives of Syria, but of India and Ceylon, it must be inferred that they were brought by traders from the South, either through Arabia, or in ships by way of the Red Sea to Egypt; and it must further be inferred, from the knowledge and possession of

these spices by the Israelites in the wilderness the first year after they left Egypt, that they must have brought them from that country.

It is supposed by some commentators that *sweet calamus* and the *sweet cane* of Jeremiah are only different names for the same plant, but there is every reason to believe that they are two, the first being a *sweet-scented* and the other a *sweet-tasted* plant.

Sweet calamus is now considered to be the sweet-scented *Andropogon Calamus aromaticus,* a common grass in North West India, the leaves of which are highly odoriferous when bruised, and taste strongly of ginger. Cattle are very fond of it, but it has the property of scenting their flesh, milk, and butter. It yields an oil known as ginger grass oil. Its allies are *A. Schcenanthus,* the well-known lemon grass, which is extensively cultivated in Ceylon for its oil, and *A. muricatus,* known in India as *cuscus;* the fibrous roots of the latter are sweet scented, and are woven into screens for windows and verandahs.

These grasses, in their modes of growth, form tufts, producing leaves 3 to 5 feet long; in age the tufts become elevated on a short stem, often becoming cæspitose (that is, many growing together), and properly have no claim to be called *calamus,* which is the Greek for cane of any kind, and which is also the name of a genus of slender-growing palms, called canes, of which walking sticks are made.

In Smith's Dictionary of the Bible, calamus is said to be *Acorns Calamus,* there called the river reed. It is well known in this country as sweet flag, which is a more proper name for it than "reed," as it has no stem. It has sword-shaped leaves about two feet in length, produced from a thick creeping rhizocorm, the whole being aromatic; it is

common in many countries throughout temperate Europe and Asia.

It is used in perfumery, and it is quite probable that it was so applied by the Jews, but we do not consider it to be the "sweet calamus" of the above verses.

In consequence of some of the *Cyperus* family being sweet scented, and *C. pertenuis* being used by the ladies of India for scenting the hair, it has also been supposed by some to be the sweet calamus, spoken of in the above verses. It is represented in this country by *C. longus,* the roots of which are sweet scented, and known by the name of English galangale.

Sweet Cane (Heb., Iceneh)

"Thou hast bought me no *sweet cane* with money." - Isa. 43:24; 712 B.C. "To what purpose cometh there to me incense from Sheba, and the *sweet cane* from a far country?" - Jer. 6:20; 612 B.C.

Some commentators consider the "sweet cane from a far country" to be the same as "sweet calamus" (see Calamus), but it appears to us that the words refer to two distinct plants, and that "the sweet canes from a far country" were stems of the sugar-cane. Although the art of making sugar from them was probably then unknown to the Jews, the canes would nevertheless be highly valued for sweetening food or drink.

The sugar-cane, *Saccharum officinarum,* is a native of the Eastern hemisphere, but its original locality cannot be ascertained, it having been early spread over the tropical countries of Asia. It is believed to have been introduced into Europe by the Venetians about the middle of the twelfth century, and, some time in the sixteenth century,

was introduced by the Spaniards into America. It is now grown in Palestine, but its cultivation is limited.

Reed (Heb., Agmôn)

"Now, behold, thou trustest upon the staff of this bruised *reed,* even upon Egypt, on which if a man lean, it will go into his hand and pierce it." - 2 Kings 18:21; 710 B.C. "He (Behemoth or hippopotamus) lieth under the shady trees, in the covert of the *reed,* and fens." - Job 40:21; 1520 B.C. "The brooks of defense shall be emptied and dried up: the reeds and flags shall wither." - Isa. 19:6; 714 B.C. "With a line of flax in his hand, and a measuring reed." - Ezek. 40:3; 574 B.C. "And when they had platted a crown of thorns, they put it upon his head, and a reed in his right hand." - Matt. 27:29; 33 A.D. "And one ran and filled a spunge full of vinegar, and put it on a reed, and gave him to drink." - Mark 15:36; 33 A.D.

The name reed, in conjunction with cane, is applied to the flower stems of grasses, the larger kinds being called canes, such as the Bamboo and Sugar Canes, also the slender stems of certain Palms, such as those used for chair bottoms and walking sticks, and the name reed is usually applied to grasses, with slender, but firm, rigid stems, of which the common reed of this country, *Phragmitis communis,* is a good example, as also the reed mace, *Typha* The word reed is of frequent occurrence in the Bible, either singly or along with rushes, bulrush, and flags, thus indicating, that, as in this country, reeds grew on banks of rivers and in wet places.

The reeds proper of Palestine consist of several species of *Phragmitis,* and *Arundo Donax;* the latter, however, is the most important. It is common in many parts of Palestine, and abundant on the borders of the Dead Sea, forming

impenetrable thickets which may be compared to the Bamboo Jungles of India. It is also common in the south of Europe. It attains the height of 8 to 12 feet, having a diameter of 2 to 3 inches at its base, and terminated by a plume of flowers similar to the sugar-cane or pampas grass; the leaves are alternate, about a foot in length, of a glaucous green color.

It is used for many domestic purposes, walking sticks, fishing and measuring rods being made of it, and also musical pipes; and it was probably this reed, the carpenter's measuring rod, on which the "spunge full of vinegar" was put, as stated in the text quoted above.

With regard to the reed placed in Christ's right hand, in old pictures it is represented with a thickened top, and there is reason to suppose it means the mace reed, *Typha latifolia.* It is, however, a question, whether at the time of the crucifixion, March or April, the plant was in a state as forward as that represented in the picture, and also whether it grew so near Jerusalem as to be readily obtained; it may, therefore, be supposed that the thickened top was due to the clever imagination of the artist. At the present day, as of old, in Palestine, the slender stems of *Phragmitis scriptorum,* which is probably the same as *P. communis,* are in common use for writing pens.

Bulrush (Heb., Gôme)

"And when she could not longer hide him, she took for him an ark of *bulrushes,* and daubed it with slime and with pitch, and put the child therein." - Exod. 2:3; 1571 B.C. "That sendeth ambassadors by the sea, even in vessels of *bulrushes* upon the waters." - Isa. 18:2; 714 B.C.

It must be understood that the plant of the above verses is quite distinct from that called bulrush in this country;

both, however, belong to the Sedge family, *Cyperaceæ,* and both grow in rivers, lakes, and wet places. The common bulrush of this country, *Scirpus lacustris,* called by early English writers pool-rush, has cylindrical stems like the common rush; while that of the Nile, *Cyperus papyrus,* now called *Papyrus anti-quorum,* has three-sided stems, attaining the height of eight to ten or even sixteen feet, and the thickness of from two to three inches at the base, tapering upwards, and terminated by a sheath, from which issues a tuft of numerous grass-like panicles, bearing numerous florets like grass; the whole when perfect assuming the form of a pendulous umbel, which may be compared to a common loose mop. It formerly grew on the banks of the Nile, forming a complete jungle; it is now extinct in lower Egypt, but is found in the White Nile, and is recorded by Dr. Welwitsch as far south as Angola; it also grows near Sera Cruz, in Sardinia, but is supposed to have been introduced there.

Although extinct in the lower Nile, it continues to flourish in Palestine, regarding which Canon Tristram says he saw it "growing luxuriantly in a swamp at the North end of the Plain of Gennesaret, and it covers many acres of the inaccessible marshes of the Huleh, the ancient Merom." He says,"The whole marsh is marked in the maps as 'impassable,' and most truly it is so. I never anywhere else have met with a swamp so vast and so utterly impenetrable. First, there is an ordinary bog, which takes one up to the knees in water; then, after a mile, a belt of deeper water, where the yellow water lily flourishes. Then a belt of tall reeds, the open water covered with white water lily; and beyond, again, an impenetrable wilderness of Papyrus, extending right across to the east side. In fact, the whole

is simply a floating bog of several miles square - a very thin crust of vegetation over an unknown depth of water, and if the weight of the explorer breaks through this, suffocation is imminent." Dr. Thomson describes it in the same manner, and calls it a "ten-mile marsh" of "utterly impassable slough."

Besides being used for making vessels for floating on the water as the ark of Moses, and for domestic purposes, it is famed for being the material of which the paper of the ancients was made, called *Papyri* - hence paper (see Paper Reed). The plant was introduced into this country from Sardinia in 1802, but is not sufficiently hardy to thrive in the open air. Specimens of it are to be seen in the hothouses at Kew and other Botanic Gardens.

Paper Reeds (Heb., Aroth)

"The *paper reeds* by the brooks, by the mouth of the brooks, and everything sown by the brooks, shall wither, be driven away, and be no more." Isa. 19:7; 714 B.C. (See Bulrush).

The paper reed is understood to be *Papyrus antiquorum,* which is described under bulrush. It is there stated to have a three-sided stem 2 to 3 inches in diameter at the base and tapering upwards, having a smooth thin bark enclosing a mass of white pith like that of the common rush; this pith is famed as being the material of which the *papyri* of the ancients was made. The records found in the Egyptian tombs, as also those found in the now partially exhumed cities of Herculaneum and Pompeii, in Italy (which were suddenly buried in ashes thrown out by Mount Vesuvius, in 79 A.D.), were all written on paper made from the Papyrus stems, thus showing that the plant was of great importance in early times.

The mode of preparing the paper appears to have been very simple: the stem was first peeled, the pith cut lengthways into thin slices, which were laid side by side with their edges touching one another. These were then sprinkled with gummy water, or, as some say, with the thin muddy water of the Nile; a heavy press was then applied, and thus the whole became united into one piece, of greater length or breadth according to circumstances. The sheet was then dried and cut into the required sizes for use.

Some consider the *aroth* translated paper reeds should be "green herbage" in general, but, for the sake of explanation, we deem it best to consider it in its literal reading in the above verse, *paper reed.*

Rush (Heb., Gôme)

"Can the *rush* grow up without mire? Can the flag grow without water?" - Job 8:11; 1520 B.C. "And the parched ground shall become a pool, and the thirsty land springs of water: in the habitation of dragons, where each lay, shall be grass with reeds and *rushes.*" - Isa. 35:7; 713 B.C.

In Exodus 2:3, and Isaiah 18:2, already quoted under bulrush, the Hebrew word *gôme* is rendered *bulrush,* but in the above verses *rush* only, therefore it may be considered the name for rush-like plants in general, and may include the common bulrush, *Scirpus lacustris,* which is also found in Palestine; it belongs to the family *Cyperaceæ,* while the true rush belongs to the family *Juncaceæ,* represented in this country by about twenty species of the genus *Juncus,* all of which have cylindrical stems, and grow in wet places. A group, consisting of six British species having flat grasslike leaves, have been separated from Juncos under the name of *Luzula*. They grow generally in pastures and by river banks. Six British species of Juncos are also natives of Palestine,

and as the above quotations show that they grow in wet places, as they do in this country, it may reasonably be inferred that our rushes represent the rushes of the Bible.

Flags (Heb., Achu, Suph)

"And she laid it in the *flags* by the river's brink." … "And when she (Pharaoh's daughter) saw the ark among the *flags,* she sent her maid to fetch it." - Exod. 2:3, 5; 1571 B.C. "Can the rush grow up without mire? can the *flag* grow without water?" - Job 8:11; 1520 B.C. "And the brooks of defense shall be emptied and dried up; the reeds and *flags* shall wither." - Isa. 19:6; 714 B.C.

In this country the word flag is applied to certain plants having broad sword-shaped leaves, such as the corn flag, *Gladiolus communis;* yellow flag, *Iris Pseud-acorus;* stinking gladwyn, *Iris fœtidissima;* sweet flag, *Acorus Calamus;* Cat-tail flag, *Typha latifolia;* water dock, *Rumex aquaticus;* water plaiutain, *Alisma Plantago;* and other such broad-leaved plants; with the exception of the first, they grow by the banks of rivers, brooks, and in other wet, marshy places, or even in water. The flowering rush, *Butomus umbellatus,* is also sometimes called flags. All the above are common in most countries throughout the Northern hemisphere, and all or any one of them may be taken as representing the flags of the Bible.

Some commentators consider the term flag to be a general term for all plants growing in the vicinity of rivers and marshy places; this view is based on the Hebrew word *ache* being translated "meadow" in Genesis 41, verses 2 and 18. "And, behold, there came up out of the river seven well-favored kine and fat fleshed; and they fed in a *meadow."*

In Isaiah above quoted the Hebrew word translated flag is *Suph;* and in Jonah 2:5, the same Hebrew word is translated

weeds–"the depth closed me round about, the *weeds* were wrapped about my head." This has led the authoress of the "Scripture Herbal" to consider flags to be *Zostera marina,* known in this country as grass wrack, growing in mouths of tidal rivers, or even in the deep sea; its leaves are ribbon-like, 3 to 4 feet long, floating in submerged masses, but there is no good evidence in support of this supposition, or that the *Zostera* grew in that part of the Nile where Moses was found.

Division 2. - Herbs. (Heb., Chatzer)

This Division includes Culinary Herbs, Flowers, and Weeds.

"And God said, Let the earth bring forth grass, the *herb* yielding seed… after his kind." - Gen. 1:11; 4004 B.C. "And God said, Behold, I have given you every *herb* bearing seed, which is upon the face of all the earth… to you it shall be for meat." - Gen. 1:29.

Besides the above, the word herb occurs twenty-six times in the Bible, generally in allusion to its being food for man and beast. In a figurative sense, as well as in Botany, the word has *a* very wide signification; in a general sense, it includes all plants that produce a flower stem direct from the ground, and after flowering and perfecting seed, wither

and die. Such are generally known as herbaceous plants, which include both annual, biennial, and perennial rooted plants, the first coming into perfection in one year and then dying; the second in two years; and the third, having permanent roots, and producing flower stems yearly. Herbs, with grasses, constitute the greatest portion of the flora of the earth, presenting very great diversity of form and size; many furnish food for man and beast, while others are highly poisonous, though in the hands of the chemist they become important remedial agents in the cure of diseases.

Lilies (Heb., Shilsan)

"And the chapiters that were upon the top of the pillars were of lily-work in the porch." - 1 Kings 7:19; 1005 B.C. "I am the rose of Sharon, and the *lily* of the *valleys*." – Song Of Sol. 2:1; 1014 B.C. "As the *lily* among thorns, so is my love among the daughters." – Song Of Sol. 2:2; 1014 B.C. "Consider the *lilies* of the field, bow they grow." - Matt. 6:28; 31 A.D.

The words lily, lilies, and lily-work are mentioned eleven times in the Bible, six in the Song of Solomon, all being emblematical of beauty and sweet scent. Lilies and lily-work are mentioned three times in Kings, for forming patterns of carved ornaments for the pillars and other parts of Solomon's Temple.

In this country the term lily is a very general name given to many bulbous-rooted, pretty-flowering plants, especially of the Lily family *(Liliaceæ),* many of which are common in Palestine. *Lilium chalcedonicum* is, however, the only true Lily, native of that country, for although the white lily, *Lilium candidum,* is abundantly cultivated for its beauty, it is a doubtful native.

Some suppose the first to be the "Lily of the Valley," while Sprengel considers it to be the jonquil, *Narcissus Jonquilla;* others think it was *Amaryllis (Sternbergin) lutea,* an autumn-flowering bulb, with bright yellow flowers, a native of South Europe and Palestine, where it is abundant in the vales.

It is, however, generally admitted that the lilies of the Bible cannot be identified with any special plant or plants, but that the term "lily" is a general one for all plants having open lily-like flowers, of showy colors, thus including *Anemone, Ranunculus, Adonis,* Cornflag, and even *Iris,* which are abundant in Palestine. *Anemone coronaria,* with its various brilliant colors, is the most conspicuous, and grows almost everywhere, without regard to soil or situation. It is abundant on the Mount of Olives, and may well be considered to represent the "lilies of the field" that surpassed "Solomon in all his glory."

No doubt some special lily was used as a pattern for the carved lily-work for ornamenting Solomon's Temple, and there is every reason to suppose that the ornaments were in the form of rosettes, and that the many-petaled rose-like flower of the common water lily, *Nymphœa alba,* a native of Palestine, or *N. Lotus,* supplied the pattern. There are sculptured representations of these found in the Egyptian tombs, thus showing that water lilies were used for such purposes in early times by the Egyptians.

Dr. Thomson describes a showy-flowering plant, which he calls the *Hûleh* lily, very abundant in many places. His description of the plant is very vague, but, judging from what he says, it appears to be a species of *Iris.*

It must be understood that the plant familiarly known in this country as the "Lily of the Valley" *(Convallaria*

majalis), is not a native of Palestine, and therefore cannot be the "Lily of the Valley" of the Bible.

Rose of Sharon (Heb., Chablat Zeleth)

"I am the rose of Sharon, and the lily of the valleys." – Song Of Sol. 2:1; 1014 B.C.

Commentators are not agreed as to what plant is meant by the Rose of Sharon„ The word "Rose" appears have to originated in the Hebrew word for bulb having been translated "rose" in our Bibles. This has led to the inference that the bulbous-rooted plant, *Narcissus Tazetta,* is the Rose of Sharon, and that the "rose" of the present received its name from the circumstance of the fruit, well known as hips, being the shape of a bulb.

Narcissus Tazetta grows abundantly on the Plain of Sharon, which is a rich tract of land lying between the mountains of the central part of the Holy Land and the Mediterranean, supposed to be the region between Cæsarea and Joppa. It also grows on the slopes of the adjacent hills, and being sweet-smelling, is a great favorite with the people; during the flowering season, it is to be found in almost every house, especially in Damascus. There is, however, nothing in the text to lead us to suppose that the "Rose of Sharon" was sweet-smelling, and therefore any abundant and pretty-flowering plant growing in Sharon may be adopted as the one meant, such as the showy species of Rock rose, and brier rose. (See Rose).

Leek (Heb., Chatzir)

"We remember the fish, which we did eat in Egypt freely; the cucumbers, and the melons, and the *leeks,* and the *onions,* and the *garlick."* - Numb. 11:5; 1490 B.C.

Leek, *Allium Porrum;* Onion, *A. Cepa;* Garlic, *A. sativum*. It is not here necessary to specially describe these

three well-known, generally-esteemed, culinary vegetables, which have been cultivated in Egypt from remote antiquity, and in course of time have spread through the principal countries of the earth favorable to their growth. They belong to the bulbous-rooted section of the Lily family. The bulb of the leek, however, differs from the onion in being cylindrical, six or more inches in length, and formed by the long bases of the leaves overlapping one another, thus forming an apparent stem.

On account of the Hebrew word for leek being in other parts of the Bible rendered "herbs" and "grass," and the Leguminous plant, *Trigonella fœnum-græcum,* being greatly eaten in a young state as a salad by the Egyptians, and sold in the streets of Cairo at the present day, it is considered by some commentators to be the leek that the Israelites longed for.

T. fœnum-græcum is a three-leaved clover-like annual plant, having a simple erect stem 2 to 3 feet high, with small axillary yellowish flowers. The seeds are also eaten. They are very mucilaginous, have a strong odor, and are used in this country to give a false importance to horse medicine, and for scenting damaged hay. There is, however, no reason for doubting that the plant the Israelites longed for was the true leek.

Garlick (Heb., Shoomin)

"We remember the fish, which we did eat in Egypt freely; the cucumbers, and the melons, and the leeks, and the onions, and the *garlick."* - Num. 11:5; 1490 B.C.

Garlic, *Allium sativum,* is a hardy, bulbous perennial, belonging to the Lily family. It is wild, as well as cultivated, in Europe, Western Asia, and Egypt, as it was in the time of Moses. It is well known as a culinary stimulant, and,

although not much used in this country, is extensively used in France, Italy, and Eastern countries, and is even eaten raw with bread. It is, however, probable that this was the kind cultivated in gardens under the name of Schallott, it being milder than A. sativum. It is wild, as well as cultivated, about the once-famed city of Escalon, in Palestine - hence its name, A. Escalonicum. The above are reported to have been cultivated in this country previous to 1548.

Onions (Heb., Belsal)

"We remember the fish, which we did eat in Egypt freely; the cucumbers, and the melons, and the *leeks,* and the *onions,* and the *garlick."* Num. 11:5; 1490 B.C.

The native country of the onion is unknown. It has been cultivated in Egypt from time immemorial, and then, as now, was greatly used as an article of food, as it is also in Palestine. To show how highly onions, garlick, and radishes were esteemed, Herodotus relates that in his time (484 B.C.) there was an inscription on the Great Pyramid stating that a sum of 1,600 talents had been paid for supplying the workmen with these vegetables.

The onion is now widely spread over both hemispheres. It belongs to the Lily family, having a compact, coated bulb, formed of layers consisting of the broad bases of the leaves closely overlapping one another. There are several different varieties, varying chiefly in size and in being more or less mild in flavor, which is partly due to cultivation and climate, such as the Spanish and Portuguese onions imported to this country.

There is a kind called the underground or Egyptian onion, its peculiarity consisting in the main bulb producing numerous off-sets. It came into notice in this country

about the beginning of the present century, but is not much cultivated.

Lentils (Heb., Adashim)

"Then Jacob gave Esau bread and pottage of *lentils*." - Gen. 25:34; 1837 B.C. "And the Philistines were gathered together into a troop, where was a piece of ground full of *lentils*." - 2 Sam. 23:11; 1018 B.C. Besides these two quotations, lentils are mentioned as part of the present sent to David. - 2 Sam. 17:28. Also in Ezek. 4:9, we read of lentils, along with wheat, barley, millet, and fitches, for making bread.

Ervum lens is an annual plant of the pea family, Leguminosœ. It has slender stems and winged leaves, producing flat pea-like pods, containing the lentils, which are the size of small peas and convex on both sides. There is a red variety, with which the red pottage was made that Jacob gave to Esau, and which continues to be cultivated in Egypt and Palestine. In France and some parts of Europe lentils are extensively cultivated, and great quantities are imported into this country. The meal is considered very nutritious, and a few years ago it was patented and sold in packets under the names "Ervalenta" and "Ervalenta," these words being simply anagrams of the letters composing Ervum lens, with the addition of "ta."

Pulse (Heb., Phul; Greek, Poltos).

"Wheat, and barley, and flour, and parched corn, and beans, and lentils, and *parched pulse.*" - 2 Sam. 17:28; 1023 B.C. "Let them give us *pulse* (zer‍im) to eat, and water to drink." "Melzar took away the portion of their meat … and gave them *pulse*." - Dan. 2:12,16; 606 B.C.

Pulse is a term applied to eatable seeds contained in pods, chiefly of the *Leguminosœ* family, such as peas, beans,

kidney-beans, lentils, chickpeas, natives of the Northern hemisphere, where they have been cultivated from time immemorial as food plants, the seeds being either ground and made into bread, or parched, or with the husks eaten green as a vegetable. Such are the uses made of them not only in Palestine but in this and other countries. They are mostly annual plants, and require little art for their cultivation.

With regard to the Hebrew word translated *pulse* in Daniel, its true meaning is doubtful. Gesenius translates it "vegetables," while others consider it to mean simply "seed." Parched pulse is largely used in India, and forms a substantial food for the working class.

Beans (Heb., Pol)

"Brought (to David) wheat, and barley, and flour, and parched corn, and *beans,* and lentils, and parched pulse." - 2 Sam. 17:28; 1023 B.C. "Take thou also unto thee wheat, and barley, and *beans,* and lentils, and millet, and fitches, and put them in one vessel, and make thee bread thereof."Ezekiel 4:9; 595 B.C.

The bean, *Faba vulgaris,* is an annual plant of the pea family, *Leguminosæ.* It is supposed to be originally a native of Persia, but having been extensively cultivated in Western Asia as a food plant in early times, the country of its origin is very uncertain. It was early cultivated in Egypt (of which there is evidence, by beans having been found in the mummy coffins), and the countries bordering the Mediterranean, both by the Greeks and Romans. The latter are supposed to have introduced it into this country. Its chief use is for feeding horses, and, although they are extensively grown in this country for that purpose, large quantities are yearly imported from Egypt and Morocco.

A variety called the broad or Windsor bean is cultivated in gardens, and is a well-known vegetable.

Beans are extensively cultivated in Palestine, and bean meal is made into bread; they are also boiled, and eaten as a vegetable by the lower classes of that country.

Cucumbers (Heb., Trispium)

"We remember the fish, which we did eat in Egypt freely; the *cucumbers,* and the melons, and the leeks, and the onions, and the garlick." - Num. 11:5; 1490 B.C. "The daughter of Zion is left as a cottage in a vineyard, as a lodge in a garden of *cucumbers*." - Isa. 1:8; 760 B.C.

The cucumber, *Cucumis sativa,* is a trailing annual plant, belonging to the family of *Cucurbitaceæ.* Its native country is unknown, having been cultivated in all the warm countries of the old world from time immemorial. In this country it has been cultivated for more than 300 years, chiefly under glass in gardens of the rich; but within the present, century it has been extensively grown in the market gardens in the open air, in the vicinity of London and other large cities. Its cultivation is, however, small compared with that of Egypt and Palestine; in those countries hundreds of acres of level moist lands, or such as can be irrigated, being occupied by cucumbers. A "lodge in a garden of cucumbers" is explained by the cultivators building a small house or lodge for a person to live in, to attend to, and watch the cucumber fields. They form an important part of the food of the people, especially of the lower classes; they are chiefly eaten raw, a cucumber and a barley cake or some other kind of bread constituting a meal. The size of cucumbers grown in the open air averages from 6 to 9 inches in length. In this country several new varieties have been raised, some producing fruit nearly 32 feet in

length. Gherkins are the young fruit of the cucumber, and are extensively used as a pickle. In Egypt, O. Chate is also cultivated. On account of its young fruit being villose, it is called the hairy cucumber; its flesh is melon-like and more watery than the common cucumber.

Melon (Heb., Abattichim)

"We remember the fish, which we did eat in Egypt freely; the cucumbers, and the *melons."* - Num. 11:5; 1490 B.C.

Cucumis Melo, the flesh melon, and *C. Citrullus,* the water melon, belong to the same family as the cucumber, and, like it, are annual, tendril-climbing plants. Under cultivation they generally trail on the ground. Melons have been cultivated in Egypt and other countries of the East from the remotest times, the first for its delicious fruit, the second also for its fruit, the flesh of which contains a watery fluid of an extensively refreshing nature, and which is probably the *melon* which the children of Israel longed for in the wilderness.

At the present day it is extensively cultivated in Egypt, Palestine, and the countries of the Mediterranean, and is conspicuous for quantity in the vegetable markets of some of the cities of Spain and Italy; some fruits weigh from twenty to thirty pounds. It is not much grown in this country, but occasionally it may be seen in the fruit shops in London. The flesh melon, however, of which there are many kinds, is extensively cultivated, but requires to be grown under glass.

It is said to have been introduced into England about the middle of the sixteenth century.

Gourd (Heb., Kikayon)

"And the Lord prepared a *gourd,* and made it to come up over Jonah, that it might be a shadow over his head, to deliver him from his grief." - Jonah 4:6; 862 B.C.

Much has been written respecting the plant called gourd mentioned in the above verse. In modern times it has become a familiar name for plants of the cucumber family, such as bottle gourd, pumpkin, vegetable marrow, and others, which are extensively cultivated for culinary use, and all of which are trailing or climbing plants, with soft annual stems, and broad more or less deeply-lobed leaves. They are not only grown for their fruit, but also for affording shade to garden seats, generally known as arbors. From their rapid growth and broad leaves they are well adapted to this; and as they are used for such purposes in Palestine at the present day, it may reasonably be supposed that they were so used at Nineveh, and that the gourd of Jonah was one of this family. Although the stems of some gourds are known to grow at the rate of a foot a day, how Jonah's gourd "came up in a night," and attained sufficient size to "be a shadow over his head" cannot be explained, except by viewing it as a miracle.

The castor oil plant, *Ricinus communis,* has been supposed by Jerome, and later writers, to be the gourd of Jonah; but there is not sufficient evidence to warrant such supposition, which rests entirely on the Egyptian name, *kibil,* of the castor oil plant, being similar to the Hebrew name of the gourd. The Ricinus is a small tree, 10 to 15 feet in height, is widely spread over the warm parts of the earth, and is common in Syria. It has large broad-lobed leaves, and would afford ample shade if growing by the side of an arbor, but it is of much slower growth than the gourd, and a plant not likely to be quickly killed by a worm or grub. Its

bruised seed supplies the castor oil. It belongs to the family Euphorbiaceœ.

Wild Gourd (Heb., Pakknoth-Sadeh)

"And one went out into the field to gather herbs, and found a *wild vine (gephen-sadeh),* and gathered thereof *wild gourds* his lapfull, and came and shred them into the pot of pottage: for they knew them not." - 2 Kings 4:39; 891 B.C.

The term "vine" is not only represented by the grape vine, but by trailing climbing plants in general. Although the grape vine grows wild in countries of Western Asia, it must not be confounded with the wild vine mentioned in the above verse, which is now generally admitted to be Citrullus *Colocynthis,* a plant of the cucumber family; it either trails on the ground or climbs by the aid of tendrils in the same manner as the cucumber and vegetable marrow. The fruit is about the size and color of an orange, has a smooth hard rind when dry, and contains a soft spongy pulp, which is intensely bitter and poisonous, but is used medicinally as a purgative. Specimens of the fruit are to be seen in show bottles in druggists' windows. It is common in Western Asia and countries of the Mediterranean. In Palestine it covers dry sandy flats in the regions of the Dead Sea, the Plain of Engedi, and elsewhere, producing an abundance of orange-like fruit, very tempting to those unacquainted with its nature, as was no doubt the case with the one that "went into the field to gather herbs, and brought in a lapfull of wild gourds, and shred them in the pot." (See Vine of Sodom). By some wild gourds are supposed to be the fruits of the squirting cucumber, *Ecballium Elaterium*, which is of the habit of the cucumber, devoid of tendrils, and therefore trails on the ground. It is a native of the South of Europe, and is as abundant

as the colocynth. The fruit is about two inches in length, and resembles gherkins when ripe. It hangs downwards, forming nearly a right angle with the short foot-stalk. On being touched it suddenly parts from the foot-stalk, and with a jerk, attended with a slight noise, ejects a number of seeds and a liquid, often striking the unwary toucher in the face, and making him start with surprise. The juice is of a highly poisonous nature, but useful in medicine. There is nothing tempting in the appearance or smell of the fruit; it is, therefore, not at all probable that this formed the poison in the pot.

Vine of Sodom

"Their vine is of the vine of Sodom, and of the fields of Gomorrah: their grapes are grapes of gall, their clusters are bitter." - Deut. 32:32; 1451 B.C.

Much difference of opinion prevails as to what the plant is, spoken of in the above verse, the fruit of which has been by some writers termed the apples of Sodom. Of this, Josephus says, "Which fruits have a color as if they were fit to be eaten, but if you pluck them with your hands, they dissolve into smoke and ashes." All speak of it as the fruit of a plant growing in the region of the Dead Sea. Canon Tristram says, "Observation of the relative abundance, and of the geographical distribution of the plants of the neighborhood of the Dead Sea, would lead me to the conclusion that the simile of the Vine of Sodom is taken from the fruit of the Colocynth (Citrullus Colocynthis), which has long, straggling tendrils or runners like the vine, with a fruit fair to look at, but nauseous beyond description to the taste, and, when fully ripe, merely a quantity of dusty powder with the seeds, inside its beautiful orange rind."

Solanum sodomeum is also put forward as bearing those "Dead Sea fruits that tempt the eye, but turn to ashes on the lips." It is abundant in the lower Jordan, and the region of the Dead Sea, especially near the remains of, what Josephus calls, the cities of Sodom. It is a rude-growing, stiff-branched shrub; its branches and leaves being furnished with spines of a red color. It grows to the height of four to five, or more, feet. Its flowers are like those of the potato; the fruit is about the size of a small apple, and, when ripe, of a yellowish color, fair to look at. The fruit is at first pulpy inside, but when ripe this pulp is dried up. On being pressed, the fruit emits what appears to be dust and ashes, or as Josephus says, "Smoke and ashes," the supposed ashes being its seeds.

Another plant, *Calotropis procera,* has, by some observers, been considered to be the plant alluded to in the above verse. This appears, to us, to have less claim than either of the preceding, as it is not a vine, but a small tree, seldom exceeding the height of fifteen feet, having a corky bark, stiff branches, and large, oval, opposite leaves, the whole being full of milky juice It forms thickets in the region of the Dead Sea, and is common in India and Eastern Africa. It belongs to the family *Asclepiadaceæ*. Its fruit is about the size of an apple, of a soft texture. When ripe, it opens on one side by a slit, and is completely filled with fine, silky hairs, to which the seeds are attached. They expand like wool, and certainly cannot be called dust and ashes.

Cummin (Heb., Cammoin)

"Doth he not cast abroad the fitches, and scatter the *cummin?*" "For the fitches are not threshed with a threshing instrument, neither is a cart wheel turned about upon the

cummin." - Isa. 28:25,27; 725 B.C. "Ye pay tithe of mint and anise and *cummin*." - Matt. 23:33 A.D.

Cummin, *Cuminum sativum,* is an annual plant of the Umbel family. It is said to be a native of Egypt, but has been long cultivated in the south of Europe for the sake of its aromatic fruits, generally known as seeds, which are similar to carraway seeds, but larger. They are, however, not so agreeable in flavor, and consequently not are much used in this country. In Palestine, they are used as spice in many ways, and even mixed with meal for making bread.

Coriander (Bleb., Gad)

"And the house of Israel called the name thereof Manna; and it was like *coriander seed,* white." - Ex. 16:31; 1491 B.C.

Coriandrum sativum is an annual plant of the Umbelliferous family, allied to Carraway and Dill, but differing from both in its fruit, called seeds, being globular. It is cultivated in this country for its aromatic fruits, which are principally used in confectionery; also in the South of Europe, Egypt, and Palestine.

Anise (Greek, Anethon)

"Woe unto you, scribes and Pharisees, hypocrites; for ye pay tithe of mint and *anise* and cummin, and have omitted the weightier matters of the law." - Matt. 23:33 A.D.

The Greek word, *Anethon,* in the text, has been translated anise, which our early English botanists have given to a plant now known as *Pimpinella Anisum.* There is every reason to believe, however, that it was not the plant of which tithe was paid, that being *Anethum graveolens,* well known in this country as dill. It is a weedy, annual plant of the Umbelliferous family, having some resemblance to parsley. It is cultivated for the sake of its seeds, which are aromatic and carminative, similar to carraways.

It is used in cookery for flavoring dishes. Dill water is obtained from its seeds by distillation, and it contains an ethereal oil, used in medicine. It is found wild or is cultivated in many parts of the south of Europe, Egypt, and Palestine.

The other plant, *Pimpinella Anisum,* known in our gardens by the name of anise, is closely allied to dill both in appearance and properties. It is a native of Egypt, and is cultivated in the Levant and south of Europe for the sake of its seeds, which are used in confectionery. A well-known cordial, called aniseed, is also made from them.

Mint (Heb., Becaim)

"For ye pay tithes of *mint* and anise and cummin." - Matt. 23 also Luke 9:42; 33 A.D.

Mint, *Mentha,* is a sweet-smelling plant, an extensive genus of herbaceous perennials, belonging to the family *Labiatæ.* The genus is represented in most countries throughout the North Temperate Zone, about a dozen species being natives of this country. They are all highly aromatic, *Mentha piperita,* peppermint, and M. *viridis,* spear-mint, being the most cultivated. The first yields, by distillation, peppermint water and oil of peppermint; the second being mostly used for culinary purposes. *M. sylvestris,* the horse mint, is common in Palestine, and is probably the *mint* spoken of in the text.

Fitches (Heb., Ketyaeh)

"When he hath made plain the face thereof (the ground), doth he not cast abroad the *filches,* and scatter the cummin?"… "For the fitches are not threshed with a threshing instrument, neither is a cart-wheel turned about upon the cummin; but the fitches are beaten out with a staff, and the cummin with a rod." - Isa. 28:25,27; 725 B.C.

The plant considered to be the fitches spoken of in the above verse, *Nigella sativa,* belongs to the Ranunculus family. It is an annual, a foot or more in height, having finely-cut fennel-like leaves, with white or light blue ranunculus like flowers, and a five-celled capsule containing numerous black seeds.

It grows wild in the south of Europe, Egypt, and Syria, in which countries it is also cultivated for its seeds, which have a strong, pungent, aromatic taste. In Palestine and Egypt they are greatly used for flavoring curries and other dishes, and spread over cakes like comfits. The Egyptian ladies use them to produce stoutness, considered by them a point of beauty.

The explanation of the text in Isaiah, which says, "But the fitches are beaten out with a staff, and the cummin with a rod," is, that on account of the seeds of fitches being contained in a capsule, it requires a stronger staff to get out the seeds than the cummin, in which the seeds grow looser, and are readily separated. The seeds of both being small would be likely to be crushed if beaten out by any stronger instrument.

Besides *N. sativa* there are other species of the genus; N. *damascena* and *N. arvensis,* being cultivated in gardens. They are annuals, known by the vulgar name of "Devil in a Bush."

Rue (Greek, Peganon)

"Woe unto you, Pharisees! for ye tithe mint and *rue* and all manner of herbs, and pass over judgment and the love of God." - Luke 11:42; 33 A.D.

There seems no reason for doubting that the plant of the text is the well-known rue of the present day, *Ruta graveolens.* It, as well as several other species of *Ruta,* is

wild in Palestine, and abundant on Mount Tabor. It is also common in many parts of the south of Europe, and is cultivated in gardens for its virtues. It was held in high favor as a medicinal plant by the ancients, being for many ages considered a preventative of contagion. At the present day sprigs of it may frequently be seen before judges in courts of justice, and Shakespeare calls it "the herb of grace."

Its repute is probably more due to its strong odor than to any active medicinal principle it contains. It is used by spirit dealers to impart a false flavor to spirits.

Ruta graveolens is a small bushy shrub, with winged glaucous leaves, attaining the height of two to three feet. It belongs to the Rue family, *Rutacece,* which contains not only herbs like the rue, but also trees and shrubs widely dispersed over the temperate and warm regions of the earth.

Wormwood (Heb., Laanah)

"Lest there should be among you a root that beareth gall and *wormwood."* - Deut. 29:18; 1451 B.C. "But her end is bitter as *wormwood."* - Prov. 5:4; 1000 B.C. "Behold, I will feed them with *wormwood,* and make them drink the water of gall." - Jer. 23:15; 599 B.C. "He hath filled me with bitterness, he hath made me drunken with *wormwood."* - Lam. 3:15; 588 B.C.

These quotations are sufficient to show that wormwood is a bitter plant, and, no doubt, like the wormwood of the present day, belongs to the genus *Artemisia,* a genus of the Composite family, of which there are many species, dispersed over the northern and temperate zone, and occupying desert plains. Six of these are natives of Britain, represented by the common wormwood, *Artemisia Absinthium,* and the very common plant, *A. vulgaris,* known

as mugwort. *A. judoica* and several others are natives of Palestine; they are generally perennials, some having firm hard stems, but not sufficient to be called shrubs. They are generally of a hoary aspect and of a strong aromatic odor, and all have a strong bitter taste, which readily accounts for wormwood being spoken of with gall as symbolical of bitter calamity.

In Switzerland, *A. pontica* furnishes a bitter abstract called *Absinthe,* of which thousands of gallons are annually consumed in France, especially in Paris; it first produces activity and pleasant sensations, and inspires grand ideas to the mind, which practically illustrates the text "He hath made me drunken with wormwood." The habitual use of it, however, brings on a stupor and gradual diminution of the intellectual faculties, ending in delirium and death.

The flowers are occasionally used (or have been) in brewing, and impart an inebriating quality to ale.

Mustard (Greek, Sinapi)

"The kingdom of heaven is like to a grain of *mustard* seed, which a man took, and sowed in his field, which indeed is the least of all seeds: but when it is grown, it is the greatest among herbs, and becometh a tree, so that the birds of the air come and lodge in the branches thereof." - Matt. 13:31-32; Mark 4:31-32; and Luke 13:19; 31 A.D.

The pungent condiment, well known by the name of mustard, is prepared by grinding the seeds of *Sinapis alba* and *S. nigra,* annual weedy plants belonging to the cabbage family, *Cruciferæ.* They are extensively cultivated in this and other countries for the sake of their seeds, which are not only ground for mustard, but also yield a useful oil, similar to colza oil, for which it was most probably cultivated in fields in Palestine at the time of our Saviour. As its

properties and uses are not mentioned, and it is not noticed in the Old Testament, it becomes a question whether the mustard plant spoken of in the parable was the same as the plant we now call mustard. In general the mustard plant of this country does not exceed the height of 3 or 4 feet, but the parable says it is the "greatest among herbs and becometh a tree."

In support of the common mustard, *Sinapis nigra,* becoming a tree, it has been described by some travelers in Palestine to be as high as a horse and rider, and even has been observed to attain the height of 10 to 15 feet. Lord Claude Hamilton says he saw it in Upper Egypt higher than he could reach, and with a stem as thick as a man's arm. Although only an annual plant, its stem and branches in autumn become hard and rigid, and of quite sufficient strength to bear small birds who are attracted to it for its seeds.

Some writers, however, consider this not sufficient to warrant its being called a tree, which has led to another plant being suggested, namely, the *Salvadora persica,* a small tree of the family *Salvadoraceæ,* of which only a few species are known, natives of India, Ceylon, and Persia. *S. persica* is found as far north as latitude 31° in the hot valleys of the south end of the Dead Sea. It is a small, soft-wooded tree, with simple leaves, averaging about twenty-five feet in height. In Irby and Mangles' Travels it is thus spoken of: "On leaving the shores of the Dead Sea, we saw a curious tree, which we observed in great plenty, and which bore a fruit in bunches resembling in appearance the currant, with the color of the plum. It has a pleasant, though strong, aromatic taste, exactly resembling mustard, and if taken in any quantity produces a similar irritation in the nose

and eyes to that which is caused by taking mustard. The leaves of the tree have the same pungent flavor as the fruit, though not so strong."

This statement, in conjunction with the present Arabic name of the tree, *Khardal,* which means mustard tree, has led Dr. Royle to consider it to be the tree alluded to in the parable. There is, however, much against this view, the *Salvadora* not being found so far north as Galilee (the climate there being too cold); it would, therefore, be unknown to the great multitude gathered round Christ when he spoke the parable on the Mount.

It is now considered by most commentators that the common mustard, *Sinapis nigra,* was the plant alluded to, but there is no collateral evidence in proof that it was used as a condiment by the Jews at the time of our Lord.

In 1827, a paper was published, entitled "Remarks on the Mustard Tree mentioned in the New Testament, by John Frost." The author endeavors to prove, but upon no positive evidence of his own acquiring, that the *Phytolacca dodecandra,* is the mustard tree, but his opinion is not worth a moment's consideration; he was a vain charlatan.

It is curious that another writer endeavors to show that this plant is the hyssop of the Bible (see Hyssop).

Rose of Jericho

"O, my God, make them like a wheel (Ha. gulgal), as the stubble before the wind." - Psa. 83:13. "As the chaff of the mountains before the wind, and like a rolling thing (gulgal) before the whirlwind." - Isaiah 17:13; 741 B.C.

In the Apocrypha, Wisdom is compared to a *"Rose* plant in *Jericho*." - Eccl. 24:14.

In modern times a plant has received the name of "Rose of Jericho," and on account of its singular nature has led

some writers to consider that the two first verses have reference to it, and therefore can have nothing to do with the roses of our gardens. In botany it is called Anastatica Hierochuntica;[1] it belongs to the cabbage family, Cruciferœ, and is allied to a weedy plant common in this country, known as swine's cress (*Senebiera Coronopus*). It grows abundantly about Jericho, and throughout Syria and the regions of the Mediterranean. It is an annual, having a tap-root, from which numerous slender branches are produced, forming a circular disc about a foot in diameter, at first lying nearly flat on the ground. It has small leaves, and small white flowers at their axis. When the seeds are perfected, the stems become dry, hardened, and incurved, their points meeting, and forming a skeleton hollow ball, which in time (by the power of the wind) loses hold of the ground, and, being blown about, rolls and turns over like a wheel or rolling thing. This may therefore be accepted as an explanation of the above quotations from Psalms and Isaiah.

Dr. Thomson calls it the wild artichoke, and says, "When ripe and dry in autumn, these branches become rigid and light as a feather, the parent stem breaks off at the ground, and the wind carries these vegetable globes withersoever it pleaseth. At the proper season, thousands of them come scudding over the plain, rolling, leaping, bounding with vast racket, to the dismay both of the horse and his rider. Once, on the plain north of Hamath, my horse became quite unmanageable among them. They charged down upon us on the wings of the wind …If this is not the

1 Anastatica means Resurrection; Hierochuntia, the original name of Jericho.

'wheel' of David, and the 'rolling thing' of Isaiah, I have seen nothing in the country to suggest the comparison."

On being wetted, the ball again expands; and thus, wet or dry alternately, it will retain its hygrometric property for a considerable time. This circumstance has led to its being held in superstitious veneration by the natives. It is called by the monks "Rose of Jericho," and "Mary's Flower," the latter on account of its being said to have expanded at the birth of our Saviour.

In marginal Bibles, the "rolling thing before the whirlwind" is rendered "thistle-down;" but as thistle-down rises in the air, and is carried along by the wind, it cannot be called a *rolling* thing.

In recent years, other plants have been substituted, and sold in the curiosity shops of London as the "Rose of Jericho," or "Resurrection plant," such as the capsular fruit or seed vessel of several species of Fig Marigold *(Mesembryanthemum),* natives of the Cape of Good Hope; also of *M. nodiflorum,* a native of Palestine, growing abundantly in the neighborhood of the Dead Sea. Their fruits, when ripe, expand when wetted like the *Anastatica,* but they are small, not being more than an inch in diameter.

The most beautiful substitute for the "Rose of Jericho," is *Selaginella lepidophylla,* a native of Mexico, growing flat in the form of a rosette, which when dry curls inwards like a ball, and when wetted again opens.

Mallows (Heb., Malluach)

"Who cut up mallows by the bushes, and juniper roots for their meat." - Job 30:4; 1520 B.C.

No special plant can be positively determined on as the mallows of the above verse; but as different species of the genus *malva* are common in Palestine, growing by the road

sides and waste places, in the same manner as *M. sylvestris* and *M. rotundifolia* do in this country, and as they are of a soft and mucilaginous nature, and not unwholesome, the mallows "cut up by the bushes" may have been some species of *malva.* It is, however, certain that these would only be eaten in times of great privation.

On account of the Hebrew word, *malluach,* meaning saltness, some commentators think it indicates a plant growing near the sea, or having a saltish taste; and as the *Atriplex Halimus* meets these two points, it is therefore considered to be the mallows. It is a strong-growing, bushy shrub, five or more feet in height, having simple, somewhat hoary leaves, and small inconspicuous flowers. It is abundant on the shores of the Mediterranean, and in the region of the Dead Sea, where it is said to attain the height of ten feet. It is, however, very questionable whether this hoary, truly littoral shrub, grew so far away from the sea as the "land of Uz," the country of Job, which commentators suppose to have been situated in the east of Syria, near the Euphrates.

In Smith's "Dictionary of the Bible," under "Mallows," is an extract from a work which says, that in 1600 Mr. William Biddulph was traveling from Aleppo to Jerusalem, and "saw many poor people gathering mallows and three-leaved grass, and asked them what they did with it, and they answered that it was all their food and they did eat it." This is curious, as showing that it had been the custom for the poor to eat mallows since the time of Job, a period of over three thousand years.

We, however, believe the mallow is not the name of any special plant, but common to others with spinach-like qualities, such as different species of *Chenopodium*

and *Atriplex,* of which there are a considerable number in Syria, most of them being annual, weedy plants, with soft, mucilaginous leaves. About twenty species are also natives of this country, and it is not uncommon for them to be eaten. *Atriplex hortensis* is even cultivated in gardens as a substitute for spinach.

Another *plant, Corchorus olitorius,* which belongs to the linden family *Tiliaceæ,* is by Celsius and Sprengel ranked as one of the plants called mallows, but this must be accepted as doubtful, as the species is a native of India; and although it is now cultivated in all warm countries for its young shoots, which are eaten as asparagus, and in Syria and Egypt, known by the name of Jews' mallow, it is questionable whether it was cultivated in Syria in the time of Job. It is an annual, with simple, slender stems, the fiber of which, with *C. capsularis*, forms the jute of commerce. For their fiber both species are extensively cultivated in India, but especially the latter.

The "three-leaved grass" mentioned above may probably be the clover-like *Trigonella, fœnum, græcum,* eaten in Egypt at the present day (see Leek).

Bitter Herbs

"And with bitter herbs they shall eat it. - "Ex. 12:8; 1491 B.C.

These words do not afford sufficient data to enable us to satisfactorily determine what in those days were the plants eaten as bitter herbs; we may reasonably suppose, however, that they were plants of the same nature and properties as those now commonly eaten with flesh meat, and called salads, the most common being the different sorts of lettuce, endive, young leaves of the chicory, dandelion, and sorrel. The first four belong to the order *Compositæ,* and

contain a bitter principle; the latter is acid, and belongs to the family *Polygonaceæ,* which contains the buckwheat, dock, and rhubarb.

In their wild state they are weedy plants, and widely distributed over the northern hemisphere. Most of them being common in Egypt and Western Asia, it is reasonable to suppose that one or more of them might be the bitter herbs eaten at the Passover. At the present day these and many other bitter plants are eaten by the Arabs.

Spikenard (Heb., Nard.; Lat., Spica)

"While the king sitteth at his table, my *spikenard* sendeth forth the smell thereof." – Song Of Sol. 1:12; 1014 B.C. "Thy plants are an orchard of pomegranates, with pleasant fruits; camphire, with *spikenard*." – Song Of Sol. 4:13; 1014 B.C. "There came a woman having an alabaster box of ointment of *spikenard,* very precious; and she brake the box, and poured it on His head." - Mark 14:3; 33 A.D. "Then took Mary a pound of ointment of *spikenard,* very costly, and anointed the feet of Jesus, and wiped His feet with her hair; and the house was filled with the odor of the ointment." - John 12:3; 33 A.D.

Spikenard has of late years been clearly ascertained to be the root and young stems before the leaves unfold of *Nardostachys Jatamansi,* which belongs to the family *Valerianaceæ.* It is a perennial herb, allied to the *Valeriana officinalis* of this country, but the roots have a much stronger and more pleasant scent; it is a native of Nepaul, Bootan, and other parts of the Himalayan mountains, extending into Western Asia. In India it is used as a perfume for the hair, and there is every reason to believe that the precious "ointment of spikenard" came from India. In ancient times it was a favorite with the ladies of Rome, but their ideas of

perfumes must have been different from those of the ladies of modern times, for it is not now used, and the odor would by some be called disagreeable.

Valeriana officinalis is extensively collected in this country, and the roots are used for medical purposes; its scent is much inferior to that of *Nardostachys Jatamansi.* It is highly agreeable to cats, plants in gardens being often destroyed by their lying on and rolling over them.

Linnaeus has applied the word *nard, nardus* (Latin) to a genus of grasses of which there is only one species, *N. stricta,* a hard wiry grass, native of this country, growing in dry places, and known as mat grass, but has nothing to do with the *nard* of Solomon.

Galbanum (Heb., Cheldenah)

"Take unto thee sweet spices, stacte, and onycha, and *galbanum;* these sweet spices with pure frankincense." - Exod. 30:34; 1491 B.C.

Galbanum is a gum obtained from several species of the Umbel family, allied to the genus Ferula (fennel), natives of Persia and Syria. We may therefore infer that the galbanum ordered to be used by the Israelites was a Syrian product, obtained probably from Ferula persica, now called *F. galbaniflua;* but as the particular species yielding the galbanum of the present day have not been well ascertained, it is impossible to determine the special plants from which the Israelites obtained their galbanum.

The plants producing galbanum are strong-rooted perennials, their flowering stem attaining the height of several feet, with alternate, partially-sheathing, finely-divided leaves, terminated by umbels of generally yellow flowers.

The gum is the natural exudations of the stem, or is obtained by cutting it across (when young) a few inches above the surface of the ground. The milky juice which exudes from the wound soon hardens, and forms one of the kinds of galbanum of commerce, that which exudes naturally being called grains or tears.

The odor of galbanum is strongly balsamic and pungent, when burnt emitting a not very agreeable odor, only inferior to assafœtida, the product of an allied species of *Ferula.*

The present use of galbanum is in medicine.

An allied plant, *Bubon galbanum,* a native of the Cape of Good Hope, also produces a kind of galbanum.

Mandrakes (Heb., Judith/1.)

"And Reuben went in the days of wheat harvest, and found *mandrakes* in the field, and brought them unto his mother Leah." - Gen. 30:14; 1747 B.C. "The *mandrakes* give a smell, and at our gates are all manner of pleasant fruits." – Song Of Sol. 7:13; 1014 B.C.

Although there is no collateral evidence to assist in identifying the word mandrake as the name of a plant, it is now admitted by most commentators to be the plant known as *Mandragora officinalis,* a herbaceous perennial, of the Nightshade family, *Solanaceæ,* which also includes the potato and deadly nightshade. It has a large tap-root (which is sometimes forked), from which spring many lanceolate leaves, about a foot in length; these lie nearly flat on the ground, in the form of a rosette, from the center of which rise the flower-stalks, each bearing a single purple flower, in form similar to the flower of a potato, succeeded by a globose fruit somewhat larger than the ordinary sized potato apple, and of a yellowish color. When perfect the fruits lie in the center of the rosette of leaves like eggs in

a nest, and contain a fleshy pulp, possessing a peculiar but not unpleasant smell, and a sweetish taste. *M. officinalis* is in some degree poisonous, but not to the extent of some of its allies, as belladonna and henbane. It is emetic, purgative, and narcotic, and in olden times was much used medicinally, its efficacy, however, depending more upon the superstitious notions regarding it (since the time of Reuben) than from its real value. The superstitions probably arose from its thick tap-roots having some resemblance to the lower part of the human body, which circumstance greatly aided to lead the ignorant to believe that it possessed the amorous properties ascribed to Reuben's mandrakes, which properties have not been verified by modern experience.

As neither the flower or fruit of *Mandragora officinalis* "give a smell" pleasant or unpleasant, it is doubtful whether the mandrake mentioned in Canticles is the same plant as the mandrake of Reuben above described.

Josephus says, that in and before his time, it was held by the Jews in great superstition, as also by the Greeks, and "that he who would take up a plant thereof, must tie a dog thereunto to pull it up, otherwise if a man should do it, he should surely die in a short space after." It is further stated that the dog after pulling it up dies. The ancient Romans also held the mandrake in superstitious awe, and considered it so potent and valuable a medicine that the mode of taking the root from the ground was made a special ceremony. The operator stood with his back to the wind, drew three circles round the root with the point of a sword, poured a libation on the ground, and turning to the west begun to dig it up. Gerard, in his Herbal, 1597, says, "There hath been many ridiculous tales brought up of this plant, whether of old wives, or some runagate surgeons, or physique mongers, I

know not. They add, that it is never or very seldome to be found growing naturally, but under a gallows, where the matter that has fallen from a dead body hath given it the shape of a man, and the matter of a woman the substance of a female plant, with many other such doltish dreames." And that the roots give a shriek when pulled out of the earth. Shakespeare says, "And shrieks like mandrakes torn out of the earth, that living mortals hearing them run mad."

Mandragora officinalis is a native of the south of Europe and the Levant, and Hasselquist observed it near Nazareth. Dr. Thomson says he saw it most abundant on the lower ranges of Lebanon and Hermon. "The apples when ripe are of a pale yellow color, soft, and of an insipid sickish taste. They are said to produce dizziness, but I have seen people eat them without experiencing any such effect. The Arabs, however, believe them to be exhilarating and stimulating even to insanity; hence the name "apples of the *jars"* (evil spirits).

According to Turner's list of herbs, it was introduced into the gardens of this country more than three hundred years ago; but not being common, has led to the thick roots of the white Bryony, *B. alba,* being substituted, and sold to the ignorant by quacks as mandrakes.

Sprengel and others suppose the mandrake to be a species of small gourd, *Cucumus dudaim,* a native of Syria and Egypt; but there is no more corroborative evidence to determine this as the Mandrake of Reuben than for *Mandragora officinalis.*

Saffron (Heb., Karkôm; Arabic, Zafran[2])

"Spikenard and *saffron,* calamus and cinnamon, with all trees of frankincense." – Song Of Sol. 4:14; 1014 B.C.

2 Arabic for yellow, hence saffron.

Saffron is the produce of several species of *Crocus;*[3] it consists of the stigma and part of the style, which are collected, when the flower opens, chiefly by women and children.

The quantities of flowers gone over to supply the demand may be guessed, when it is stated that it requires at least 4,000 stigmas to make an ounce of fresh saffron. After gathering, they are either dried in the sun and pounded, or made into small cakes. In this country Saffron Walden was long celebrated for the production of saffron; the principal supply now comes from Spain, France, and Syria. It is principally used as a yellow dye, and also for coloring curries and stews. In the spring many parts of Palestine are brilliant with flowers of different kinds of Crocus. The Saffron Crocus is also collected in Cashmere and the Caucasus. Although there is no evidence to show that the saffron of the above verse is the produce of the Crocus, it may nevertheless be accepted as such.

Another kind of Saffron called Bastard Saffron is the red flowers (florets) of *Carthamus tinctorius,* an annual thistle-like spiny plant of the Composite family, extensively cultivated at the present day in China, India, Syria, Egypt, and Southern Europe, and considerable quantities are annually imported to this country under the name of safflower, chiefly used for dyeing silk, and for adulterating genuine saffron.

Hemlock (Heb., Rosh)

"Thus judgment springeth up as *hemlock* in the furrows of the field." - Hosea 10:4; 740 B.C. "For ye have turned judgment into gall, and the fruit of righteousness into *hemlock*." - Amos 4:12; 787 B.C.

3 Principally C. sativus, a blue flowered species.

The plant known as hemlock in modern times *is Conium maculation* of botanists; it is a biennial plant, of the Umbel family, common in waste places in this country and throughout Europe. It attains the height of three or four feet, having a spotted stein and its branches terminating by umbels of white flowers, its leaves being much divided, like parsley. It is highly poisonous, but it cannot be termed bitter like gall; and as the Hebrew word translated hemlock is the same as that for gall, which, in other verses of the Bible, is mentioned with wormwood, and as it is not a weed "in the furrows of fields," it is very doubtful whether the hemlock of the Bible is the same as that of the present day. By some it is supposed to be the poppy, which is as common in the cornfields of Palestine as it is in those of this country.

Cockle (Heb., Caoshah)

"Let thistles grow instead of wheat, and *cockle* instead of barley." - Job 31:40; 1520 B.C.

The plant known in this country as corn-cockle, *Agrostemma Githago,* is a strong-growing annual plant, of the Pink family *Caryophyllaceæ,* and is a troublesome weed in cornfields; it is, however, a question whether the Hebrew word translated *cockle* in our Bible means our corn-cockle. As the word *Caoshah* means "stink," the Rev. H. Tristram thinks that it may include noxious and stinking weeds in general, and that it may be one of the Arum family (which are notorious for the carrion like odor of their flowers), of which several species are common in Palestine. Celsius supposes it to be the Aconite, but that is not probable, as it is not a cornfield weed.

Nettles

"Among the bushes they brayed; under the nettles (châr̂ul) they were gathered together." - Job 30:7; 1520

B.C. "And, lo, it was all grown over with thorns, and nettles (châr̂ûl) had covered the face thereof." - Prov. 24: 31; 1000 B.C. "And thorns shall come up in her palaces, nettles (kîmmôsh) and brambles in the fortresses thereof." - Isa. 34:13; 713 B.C. "The pleasant places for their silver, nettles (kîmmôsh) shall possess them: thorns shall be in their tabernacles." - Hos. 9:6; 760 B.C. "Surely Moab shall be as Sodom, and the children of Ammon as Gomorrah, even the breeding of nettles (chewed) and salt pits." - Zeph. 2:9; 630 B.C.

On account of the above two Hebrew words being rendered nettles in our version of the Bible, commentators have been led into doubt as to the identification of the plants spoken of as nettles, but, as they are stated to grow with thorns and brambles in waste and ruined places, in the same manner as the well-known plants called stinging-nettles in this country, we may, therefore, admit that the nettles of the Bible were some species of the genus *Urtica,* of which four are recorded as natives of Palestine; *U. dioica* and *U. pilulifera* being common, often attaining the height of five or six feet. It is quite usual to see nettles growing upon ground that has been once cultivated, but is now neglected, and about ruined buildings, with which the words of Isaiah and Hosea agree.

Some exceptions, however, may be taken to the nettles of Job, for nettles do not usually grow in such places as are understood by the term wilderness. He also says, "Under the nettles they were gathered together;" if such were stinging-nettles, it is difficult to reconcile this with the act of even the evil doers, spoken of by Job.

The Rev. H. B. Tristram thinks that the nettles mentioned in Job and Zephaniah probably refer to the

Acanthus spinosus, but there seems no good ground for this supposition, except that the *Acanthus* is a spiny-leaved, strong-growing, perennial plant.

Dr. Royle thinks that the nettles in the "field of the slothful" were the charlock or wild mustard, *Sinapis arrensis,* which makes many corn fields gay in summer with its yellow flowers; his ground for this is that the Arabic word for charlock, *Khardul,* is somewhat similar to the Hebrew word, *châr̂ûl,* which is translated nettle, and may well answer for the nettles of the "field of the slothful" mentioned in Prov. 24:30.

Thistle

The word thistle is a general term for spiny plants, well known as troublesome weeds in corn fields and cultivated lands in general. In the Bible two Hebrew words have been translated thistles, choach and dardar. In the Old Testament the latter word occurs twice, and is translated thistles, as it is also in our version of the New Testament; but in the Greek it is rendered tribulus, such being the name of a spiny-fruited plant, quite distinct in its mode of growth from the plants we call thistles. We, therefore, consider it best to notice them separately under their respective Hebrew names.

1. Thistles (Heb., Choach)

"Let *thistles* grow instead of wheat." - Job 31:40; 1520 B.C.

Thistles are annual, biennial, and some of them perennial plants, having prickly stems, leaves, and flower-heads; they belong to the *Composite* family, and there are about 200 different kinds described in books; they are widely spread throughout the Northern Hemisphere, especially in the temperate zone. About a dozen or more species are natives

of this country, and chiefly belong to the genus *Carduus; C. arvensis* and *C. lanceolatus* being great pests in pastures and corn-fields. Other rude growing, prickly, weedy plants may be also classed with thistles, as, for example, in this country, Centaurea *Calcitrapa,* a formidable weed in corn-fields. This latter, with its more formidable ally, *C. venustum*, is also common in Palestine; the stems and leaves, however, are not spiny, the spines being confined to the flower-heads, the scales of the involucrum which encloses the florets terminating in hard, stiff spines an inch and a half in length. In the spring, some parts of the Plain of Sharon are covered with thistles of a gigantic size, and the milk thistle, Carduus Marianas, appears everywhere. Although thistles are not (or but sparingly) indigenous to the Southern Hemisphere, they have, nevertheless, within the last hundred years, by the agency of European civilization, become established in many regions. They are truly usurpers of the soil, and, as such, are favored by nature, their pappus being carried in the air to great distances. On whatever soil these fall, that is at all favorable to plant life, a colony of thistles appears, the original holders of the soil disappearing before them. The Pampas of South America, once grassy plains, have become a forest of thistles; and in the Cape of Good Hope, Australia, and New Zealand they have become pests to the cultivator.

2. Thistles (Heb., Dardar.; Greek, Tribulus)

"Thorns also and *thistles,* shall it bring forth to thee." - Gen. 3:18. 4004 B.C. "The thorn and the *thistle* shall come up on their altars." - Hosea 10:8; 740 B.C. "Do men gather grapes of thorns, or figs of *thistles*?" - Matt. 7:16; 31 A.D.

In our version of the New Testament the Hebrew word *dardar,* in Matthew, is rendered thistles, but in the

Septuagint it is rendered *tribulus,* which means to tear; and the French botanist, Tournefort, has adopted the word as the name of a prickly plant, *T. terrestris.* This has led to the supposition that the *dardar* of the New Testament should be referred to this plant, but as the *tribulus* is not so common as thistles, and as there is nothing to prove that the *dardar* of Genesis was *Tribulus,* we may admit that the word may refer to thistle-like prickly plants in general. *Tribulus terrestris* is a low, trailing, annual plant, having several pairs of conjugate leaves, and bearing a capsular spiny fruit. When perfect, the spines become very hard, and, lying on the ground, are a great annoyance to the incautious traveler-hence the English name, Caltrops.

The genus *Tribulus* belongs to *Zygophyllaceæ* or bean-caper family, an order which contains 100 or more species; they consist of low, bushy plants, with succulent leaves, *Balanites ægyptiaca* probably being the largest (see Balm). Many of them are plants of the desert, *Zygophyllum Fabago* forming a special feature in the barren tracts of Palestine, bordering the Mediterranean and Dead Sea, as does also *Tribulus terrestris.*

Flax (Heb., Gristah)

"And the *flax* and the barley was smitten: for the barley was in the ear, and the flax was bolled." - Ex. 9:31; 1491 B.C. "But she had brought them up to the roof of the house, and hid them with the stalks of *flax,* which she had laid in order upon the roof." - Jos. 2:6; 1451 B.C. "Moreover they that work in fine *flax,* and they that weave net-works, shall be confounded." - Isa. 19:9; 714 B.C.

The flax plant, *Linun usitatissimum,* is a slender, wiry-stemmed annual, attaining the height of about 3 feet, having small, simple, alternate leaves, and terminating

by several pretty blue flowers, succeeded by five-celled capsules about the size of a pea. These capsules are called bolls; and the expression, "The flax was bolled," means that it had arrived at a state of maturity. When the bolls are ripe, the flax is pulled, and tied in bundles; and, in order to assist the separation of the fiber from the stalks, the bundles are placed in water for several weeks, and then spread out to dry. This explains the words, "Which she had laid in order upon the roof."

The cultivation of flax is of great antiquity, as is shown by the representations of its cultivation and preparation on the sculptured tombs of Egypt; it is found, too, that the mummy cloth of the tombs is made of flax, and flax fiber has been found in the prehistoric lake cities of Switzerland.

Flax has continued to be grown from the earliest times in most countries of the Northern Hemisphere, thriving as well in the north of Russia as in the Valley of the Nile. It is cultivated in this country, but more extensively in Ireland. The supply, however, falls far short of the demand; and large quantities are imported from Russia and other parts of Europe, as well as from the United States. The seeds under the name of Linseed are also an important article of commerce, shiploads being brought from the Russian ports on the Black Sea, and from the Baltic. These, by crushing, yield linseed oil, while the refuse is compressed, and made into oil-cake, extensively used for feeding cattle. The fibers are formed into twine and rope of all sizes, and also into woven fabrics, from the finest linen to sacking cloth.

The genus *Linum,* of which there are about 80 species, belongs to the family *Linaceæ,* chiefly natives of the Northern Hemisphere, one extending to New Zealand.

Several are cultivated as ornamental greenhouse and flower garden plants.

Linen

In our version of the Bible, the words linen, fine linen, and linen yarn, are translated from five different Hebrew words, shêsh, bad, buts, etûn, and mikvêh, and one Greek word, byssos.

"And Pharaoh took off his ring from his hand, and put it upon Joseph's hand, and arrayed him in vestures of fine linen" (Heb., shêsh). - Gen. 41:42; 1715 B.C. "And all the women that were wise hearted did spin with their hands, and brought that which they had spun, both of blue, and of purple, and of scarlet, and of fine linen" (Heb., shêsh). - Ex. 35:25; 1491 B.C. "And thou shalt make them linen (Heb., bad) breeches." - Ex. 28:42; 1491 B.C. "And David was clothed with a robe of fine linen" (Heb., buts) - 1 Chr. 15:27; 1042 B.C. "I have decked my bed with coverings of tapestry, with carved works, with fine linen (Win) of Egypt." - Pro. 7:16; 1000 B.C. "And Solomon had horses brought out of Egypt, and linen yarn" (Heb., mikvêh,). - 1 Kings 10:28; 992 B.C.

In Luke 16:19; 33 A.D.: and Rev. 18:12; 96 A.D.: "fine linen" is translated from the Greek byssos, which is equivalent to othone, also the Greek for linen.

As cotton was not known in Egypt at the time Pharaoh clothed Joseph, or even in the time of Solomon, and as flax was cultivated, there is no doubt but that the linen was the woven fiber of flax, first made into thread by the women with the distaff and spindle, as stated in Pro. 31:19; 1015 B.C.; we do not, however, learn how the blue and scarlet and fine linen were woven into fabric and dyed; but, as the people, when ordered to make the curtains for the

tabernacle, had only been a short time out of Egypt, and were then in the wilderness, we must conclude that they carried the flax yarn, weaving loom, and dyeing materials out of Egypt with them.

As there is no mention of hemp, or any other fiber plant, having been cultivated in Egypt, or afterward by the Jews in Palestine, it must be inferred that linen in various qualities was a common article of dress, and was in general use for all domestic purposes, as also for sails and tackle of ships, as we read, "Fine linen (shêsh), with broidered work from Egypt was that which thou spreadest forth to be thy sail." - Eze. 27:7; 588 B.C.

The vegetable dyes known at that time in Egypt, appear to have been the henna, which furnished the yellow; the madder, the red of various shades; and the indigo, the blue. The latter being cultivated in India, the Egyptians must have obtained it by commerce. These, with metal and earthy substances variously mixed, furnish the principal different colors.

Cord

The words cord, rope, and string occur about twenty times in the Bible: they are translated from several different words, and were used for the same variety of purposes as at the present day. With the exception of what is contained in the following verses we have no information of what material these articles were made. No doubt the hides of camels and other animals were used (as they are by the Bedouin Arabs of the present day), also twisted reeds, rushes, withies, and twigs of willows and other trees. "And Samson said unto her, If they bind me with seven green withs that were never dried, then shall I be weak." - Jud. 16:7; 1120 B.C. "Moreover they that work in fine flax, and

they that weave networks, shall be confounded." - Isa. 19:9; 714 B.C. In John 2:15; 30 A.D., we read "And when he had made a scourge of small cords (Greek, schoenus), he drove them all out of the temple." And in Acts 27:32; 62 A.D.: "Then the soldiers cut off the ropes (Greek, schoenus) of the boat, and let her fall off." It is presumed from the Greek word schoenus that the scourge and ropes here mentioned were made of a kind of grass.

Schoenus was adopted by Linn[illegible] us as the generic name for certain species of *Cyperaceæ,* all of which family are known by the English name of Sedge grasses. One species of *Schoenus, S. nigricans,* is a native of Britain.

Cotton (Heb., Carpas)

The word cotton does not appear in our version of the Bible, and there is no evidence to show when it became known in Palestine; but according to Pausanias, who wrote 480 B.C., it appears to have been then cultivated, for he says that the cotton of Judea was of a yellower hue than that of Egypt and other places. It is probable that cotton fabric became known to the Jews during their captivity in Persia, under king Ahasuerus, who, it is said, reigned from India to Ethiopia; for in the book of Esther, chapter 1:5-6; 521 B.C., we read, "In the court of the garden of the king's palace, where were white, green *(carpas),* and blue hangings, fastened with cords of fine linen." The word green, according to Celsius, properly translated, should read cotton - "Where were hangings of white and violet-colored cotton." This was 520 years B.C., and as cotton had been long previous to that cultivated and woven into fabric in India, there is no doubt it was known in Persia in the time of Esther. Herodotus, writing 500 years B.C., says that the Indians had a plant that bore, instead of fruit, a wool

like that of sheep, but finer and better, of which they made clothes. Theophrastus, 300 B.C., speaks of it as growing in Ethiopia; it also appears by that time to have become known in Egypt. Its cultivation gradually increased, and it now forms one of the staple articles of commerce of Egypt and Palestine.

The cotton plant was not only early cultivated in India, for on the discovery of America by Columbus in 1492 A.D., it was found to be used by the Indians in Cuba. Cortez and Pizarro found that the cotton plant was utilized in Mexico.

The cotton plant *(Gossypium)* belongs to the Mallow family; there are several different species, *G. herbaceum* being the original East Indian type, of which there are several varieties grown. Under cultivation, it is treated as an annual; but, if left alone, it assumes the character of a shrub, varying from 2 or 3 to 6 feet in height; the leaves are alternate, heart-shaped, partially lobed, and of a soft texture; the flowers are very showy, being yellow, pink, or red; the fruit is a three or five-celled, valved capsule, about the size and shape of a fig, and when mature it bursts through the middle of each cell, presenting a mass of fine white filaments (cotton), to which the seeds are attached.

Division 3. - Trees and Bushes

This Division includes all plants with hard, woody, permanent stems and branches, from small bushes to lofty trees.

Trees

"Saul abode in Gibeah under a tree (eshel) in Ramah." - 1 Sam. 22:6; 1062 B.C. "They took their bones (that is, of Saul and Jonathan), and buried them under a tree at Jabesh." - 1 Sam. 31:13; 1056 B.C.

The word tree comprehends all plants having single, hard-wooded stems, growing from a few to 100 or more feet in height; but, on account of some kinds of bushes often assuming the characters of trees, it is difficult to determine the correct number of true trees indigenous to Palestine. Probably they do not exceed fifty, of which thirty are mentioned by special names in the Bible. These will be found noticed in their respective places in this work.

Among the largest are the cedar of Lebanon, fir, cypress, oaks, elms, maple, walnut, plane, and terebinth, which form the principal natural woods and forest of Palestine. The terms woods and forests are mentioned more than a dozen times in the Bible, and may be considered synonymous, the distinction depending on the area occupied by trees growing contiguous to one another, woods varying in size from a few to one hundred or more acres (such as are called, in this country, Parks), while forests occupy extensive districts of countries, on plains and mountains. Timber and wood, that is, trees cut down, are also mentioned many times in the Bible, and, the reading of the respective verses, shows that they were used for the same purposes as now. The words tree and trees also occur frequently and are in many cases spoken of in a figurative and symbolical sense.

Some commentators consider the word *eshel* to be a special tree, and to mean the tamarisk, of which there are several species in Palestine, varying considerably in size. The common tamarisk, *T. gallica,* is not only common throughout the coasts of Europe, but also on the opposite shores of the Mediterranean, and in Palestine, in the Valley of the Jordan, and about the Dead Sea, while *T. mannifera* abounds in the Desert (see Manna). Others, such as *T. orientalis* and *T. Pallasii,* attain the size of trees. The Rev. H. B. Tristram says that the lower banks of the Jordan are fringed with a dense mass of the latter species. In the hilly country, he says, they form graceful trees, with long, feathery branches and tufts, closely clad with the minutest of leaves, and surmounted in spring with spikes of beautiful pink blossoms, which seem to envelope the whole tree in one gauzy sheet of color; the blossoms have the appearance of catkins, and the growth of the tree is something like

that of the Arbor Vitæ of our shrubberies. He saw large numbers of the eastern Tamarisk (T. orientalis) on the banks below the site of Jabesh Gilead, where the bodies of Saul and Jonathan were laid. This leads to the supposition that it was under a tamarisk tree that they were buried; but, in Chronicles, it is said to be under an oak (*elah*) (see Oak). If the word eshel does not mean Tamarisk, there is no allusion to these beautiful trees in the Bible.

Grove

In our version of the Bible two Hebrew words, eshel and asherah, have been translated grove; the first word, eshel, as shown above, has also been translated trees. "Abraham planted a grove (eshel) in Beersheba, and called there on the name of the Lord." - Gen. 21:33; 1891 B.C.

In this country, the word grove is a familiar name for trees planted in rows or thickets, with open spaces or glades between them, thus affording shade and solitude for contemplation and worship of the true God. This was the use made by Abraham of his grove. After this, we find Moses exhorting the people not to follow the idolatrous practice of the nations then inhabiting the land of Canaan. "But ye shall destroy their altars, break their images,, and cut down their groves (asherah)." - Ex. 34:13; 1491 B.C. "Thou shalt not plant thee a grove of any trees near unto the altar of the Lord thy God." - Deut. 16:21; 1451 B.C. Judging by the words of these verses, we are led to infer that groves had become places for the worship of idols. "And the children of Israel did evil in the sight of the Lord, and forgat the Lord their God, and served Baalim, and the groves." - Judg. 3:7; 1406 B.C. "For they also built them high places, and images, and groves, on every high hill, and under every green tree." - 1 Kings 14:23; 972 B.C. "Now

therefore send, and gather-to me all Israel unto mount Carmel, and the prophets of Baal four hundred and fifty, and the prophets of the groves four hundred, which eat at Jezebel's table." - 1 Kings 18:19; 906 B.C. "And they left all the commandments of the Lord their God, and made them molten images, even two calves, and made a grove, and worshipped all the host of heaven, and served Baal." - 2 Kings 17:16; 721 B.C.

We learn that the worship of idols in "high places" was practiced up to the end of Bible History, and relics of it are still met with in Palestine at the present day. The Rev. Dr. Thomson, in his history of Palestine, entitled "The Land and the Book," says, "Every conspicuous hilltop has a *Willey* or mazar, beneath a spreading oak, to which people pay religious visits, and thither they go up to worship and to discharge vows. All sects in the country, without exception, have a predilection for these 'high places,' as strong as that of the Jews in ancient times….. "There is one of these high places, with its grove of venerable oaks, on the very summit[4] of Lebanon, east of Jezzin. It is of an oval shape, corresponding to the top of the mountain, and the grove was planted regularly round its outer edge." He mentions another grove on Lebanon, as being "resorted to by Jews, wild Arabs of the desert, Moslems, Metawelies, and Christians." In the following verse the word grove requires to be differently explained. "And he brought out the grove from the house of the Lord, without Jerusalem, unto the brook Kidron, and burned it at the brook Kidron, and stamped it small to powder, and cast the powder

4 This is surely a mistake, as the top of Lebanon is snowcapped the greater part of the year; it probably means the top of some side ridge of Lebanon.

thereof upon the graves of the children of the people." - 2 Kings 23:6; 624 B.C. The words "and he brought out the grove from the house of the Lord," and so on clearly show that living trees could could not be meant.

The learned Gesenius identifies the word *Asheerah,* translated grove, with Ashtarte or Asteroth, the wife of Baal, who was symbolically represented in the form of a tree, as shown on the sculptured walls of the ruins of Nineveh. Admitting this to be correct, we see the representative groves could readily be taken out and destroyed.

The inscription on the sarcophagus found in the tomb of king Ashmunazer at Sidon, in 1855, shows that Ashteroth was the goddess of the Sidonians.

Judging from all that has been written on the subject, it appears that trees were worshipped by man in ancient times. This, indeed, continues to be the case with all heathen nations to the present day, each great religious sect having some special tree or group of trees which they venerate, and consider as emblematical of the Deity.

Oak

In our version of the Bible the word oak occurs more than a dozen times, and is translated from six different Hebrew words, namely, êl, êlon, îlan, allah, allôn, and elâh.

"And Jacob hid them under the oak (elâh) which was by Shechem." - Gen. 35:4; 1732 B.C. "And she was buried beneath Bethel under an oak: and the name of it was called Allonbachuth." - Gen. 35:8. "And Absalom rode upon a mule, and the mule went under the thick boughs of a great oak (elah), and his head caught hold of the oak." - 2 Sam. 18:9; 1023 B.C. "And upon all the cedars of Lebanon, that are high lifted up, and upon all the oaks of Bashan." - Isa. 2:13; 760 B.C. "Of the oaks of Bashan have they made

thine oars." Ezek. 27:6; 588 B.C. "They sacrifice upon the tops of the mountains, and burn incense upon the hills, under oaks and poplars, and elms, because the shadow thereof is good." - Hos. 4:13; 780 B.C.

It is considered by some that these six words are not only the Hebrew for oaks, but also for large or "thick trees," and Professor Celsius has endeavored to show that five of these words stand for the terebinth tree, alloy, alone denoting the true oak; but, on account of the different views of authors, it is quite impossible to clear up this point, and, there being a number of different kinds of oaks in Palestine, it is probable that the words in the texts are not restricted to one kind of oak only. The Rev. H. B. Tristram says, "Probably allôn stands for the evergreen oak, and êlôn for the deciduous sorts."

In Gen. 12:6, and Deut. 11:30, we read of the plain of Moreh; and, in Gen. 13:18, "Then Abram removed his tent and came and dwelt in the plain of Mamre, which is in Hebron." "And the Lord appeared unto him in the plains of Mamre." - Gen. 18:1 and, in Judg. 9:6, "Made Abimelech king by the plain of the pillar that was in Shechem." In these texts the Hebrew word Sion is translated plain, which, according to the best authorities, should be read oak, and the plains of Moreh and Mamre are so named from the trees that grew there, which are supposed to have been oaks. Dr. Thomson says, "I do not believe that Abraham's celebrated tree at Hebron was a terebinth. It is now a very venerable oak, and I saw no terebinth in the neighborhood."

If the word elâh means terebinth tree, which some assert, then it must have been one of those trees that caught Absalom by the hair. With regard to this, Dr. Thomson

says, "The tree in which Absalom was caught was the alah, not the allon, and I am persuaded that it was an oak. That battle field was on the mountains east of the Jordan, always celebrated for great oaks — not for terebinths; and this is true to this day. There is no such thing in this country as a terebinth wood. It was an oak I firmly believe. There are thousands of such trees still in the same country, admirably suited to catch the long-haired rebels; but no terebinths. I see it asserted by the advocates of this translation that the oak is not a common nor a very striking tree in this country, implying that the terebinth is. A greater mistake could scarcely be made, It is 'simply ridiculous' to compare its strength and size with that of the oak."

With regard to the oak forests, he says, "Besides the-vast groves around us, at the north of Tabor, and in Lebanon and Hermon, in Gilead and Bashan, think of the great forests, extending thirty miles at least, along the hills west of Nazareth, over Carmel, and down south, beyond Cesarea Palestina. The terebinth is deciduous, and therefore not a favorite shade tree. It is very rarely planted in the courts of houses, or over tombs, or in the places of resort in villages. It is the beautiful evergreen oak that you find there (Quercus pseudo-coccifera). Beyond a doubt, the idolatrous groves so often mentioned in Hebrew history were of oak."

Dr. (now Sir Joseph) Hooker, who visited Palestine in 1860, described three kinds of oak, namely, Quercus pseudo-coccifera, Q. infectoria, and Q. Ægilops. They, however, vary so much in habit and in the form of the leaves in different localities, or even on different sides of the same tree, that it has led to many of the forms being described by different authors as distinct species; he says the most conspicuous is Quercus pseudococcifera. "It

covers the rocky hills of Palestine with a dense brushwood of trees, from 8 to 12 feet high, branching from the base, thickly covered with small, evergreen, rigid leaves, and bearing acorns copiously; it seldom grows to a large tree, except in the valley of the Lebanon, or where growing by itself as the tree of Mamre."

Q. Ægilops is a deciduous species, abundant in the North of Palestine, and forming mountain forests; in Bashan it attains a large size, and is, no doubt, the "oak of Bashan" spoken of in Isaiah. It bears very large acorns, which the Arabs use as food. The cups in which the acorns are contained form an extensive article of trade under the name of Valonia. They are used in tanning leather, dyeing, and in making ink.

Q. infectoria is a small deciduous tree, seldom exceeding 20 feet in height, and is much less common than the two preceding species It is, however, important, as producing the best galls, which are an extraneous growth on the leaves and twiggy branches, caused by the puncture of a small insect of the Cynips family, similar to the galls or "oak apples" produced on the leaves of the oak in this country; they form an important article of trade, and are used for similar purposes to the Valonia.

Besides these, Dr. Hooker also states that in the middle and higher regions grow Quercus Cerris, known as the Turkey oak, Q. Ehrenbergi or castanœfolia, Q. Toza, Q. Libani, and Q. mannifera. The latter, perhaps, is not distinct from Q. Robur and Q. sessiliflora, the two varieties of English oak.

According to the Bible, the oak appears to have been respected and venerated for its large size and strength, and honored as a place of burial (under its shade) for great men.

The word el means strength or mighty, and is therefore equivalent to the word Robur, a name given originally by Pliny to the Querns Robur, our English oak, which is famed for strength.

The oak of Mamre mentioned above is said to stand on the spot where grew the tree under which Abraham entertained the three angels (Gen. 18:8). The original tree is, however, considered by most commentators not to have been an oak but a terebinth tree (see Terebinth).

The present tree, Quercus pseudo-coccifera is one of the finest oaks in Palestine. Dr. Boner describes it as follows: "We soon reached Abraham's tree. It is a magnificent Ballût or prickly oak, somewhat isolated, yet with other trees not far off. The protruding knots of root at its base looked almost like pieces of dark brown rock. The stem is enormous; and as rough and shapeless as can be fancied. The branches, spreading widely in several detachments, and with their extremities drooping to the sward, throw their shade over a vast circle." (February, 1856). It is of moderate height, its trunk measuring twenty-three feet in girth, the spread of its branches being ninety feet. It is held in high veneration, and it is believed that if any person cuts or maims it, he would lose his first-born son. In the winter of 1850 it suffered the loss of a large limb, through a heavy fall of snow, and the fear of touching it rendered it difficult to obtain people to assist in removing it. A sprig of this famed tree, bearing a few leaves and acorns, was brought home by Dr. Hooker, and is to be seen at the Museum at Kew.

In the History of Susanna in the Apocrypha, we read the words "Under a holm tree," but there is nothing to lead us to determine the tree so called. Some suppose it to be the

holly, Ilex Aquifolium, which has in modern times received the name of holm tree; but the holly is not recorded as a native of Syria. On account of the leaves of the evergreen oak, Quercus Ilex and Q. coccifera, being prickly like those of the holly, one or other or both of them have also been called the holm oak.

The "Mastick tree" is also mentioned in connection with the story of Susanna, for which see Balm.

Turpentine Tree, Terebinth

"As the turpentine tree, I stretched out my branches, and my branches are as the branches of honor and grace." - Eccles. 24:16. B.C. (Apocrypha).

The original word in the above verse is *terebinth,* which in our version has been translated *turpentine tree* (a name not mentioned in any other part of the Bible), which is supposed by most commentators to be one of the trees called by the *Hebrew* name *elâh,* and some suppose it to be the *elâh* of Isa. 6:13, translated in our version "teil tree." This, however, seems to be more properly referable to the elm tree, which see. It appears that in the time of Josephus a tree was called turpentine; he says, "There is shown at a distance of six furlongs from the city (Hebron) a very large turpentine tree, and the report goes that the tree has continued ever since the creation of the world." It is also said that the captive Jews were sold under it by Titus Vespasian, 69 A.D. This is supposed to be the tree under which Abraham entertained the three angels. - Gen. 18:8. It disappeared about 330 A.D., and its place was taken by an oak. (See Oak).

In the "Scripture Herbal," the *elâh* of Isaiah, translated teil tree as above stated, is said to be the lime tree, *Tilia europœa;* but this it cannot be, as the lime tree is not found

in Palestine. The terebinth tree, *Pistacia Terebinthus,* belongs to the family of *Terebinthaceæ.* It is a large tree, having, when destitute of leaves and seen from a distance, much the appearance of an oak. Its winged leaves are similar to those of the ash, but are smaller and of a reddish-green color. Every part of the tree contains a fragrant resinous juice. It is common in Palestine, generally growing solitary, and seldom in thickets or forests. Being a tree of considerable size and longevity, it was, no doubt, like the oak, venerated in early times. It is also common in the Greek islands, and along the coasts of the Mediterranean generally. It is known by the name of turpentine tree from its yielding the Chio turpentine of commerce, which is obtained by making incisions in the stem and branches. As it is a native of Gilead, it is quite probable that its resinous juice formed part of the spicery which the Ishmaelites carried into Egypt.

Elm (Heb., Elâh; Greek, Ptelea), Teil Tree (Heb., Elâh; Greek, Ptelea)

"As a *teil* tree, and as an oak, whose substance is in them, when they cast their leaves." - Isa. 6:13; 758 B.C. "And burn incense upon the hills, under oaks and poplars and elms, because the shadow thereof is good." - Hos. 4:13; 780 B.C.

The Hebrew word *elâh* is, in our Bible, translated *teil tree,* oak, plane tree, and *elm.* In the original Greek, the *elâh* of these two verses is rendered Ptelea, the Greek name for the elm tree, therefore the English rendering elms in Hosea may be considered correct. The word Ptelea means a wing, the fruit of the elm tree being winged, in botany termed a samara. It would have been well if Linnæus had adopted Ptelea as the generic name of that tree, instead of

the Celtic name, *Ulmus;* he, however, applied the name to a small tree, a native of North America, *Ptelea trifoliata,* belonging to the family *Xanthoœylaceœ,* the fruit of which is also winged. Dropping the *P,* and substituting an *i* for *e,* makes the word Tilia, which he gives for the generic name of the lime or linden, the well known *Tilia europœa.* This has led the authoress of the "Scripture Herbal" to adopt the lime tree as the "teil tree" of Isaiah, but unfortunately for this view the lime tree is not a native of Palestine. Subsequent writers consider Isaiah's elicit to be the terebinth (which see); and as there is nothing in the wording of the two verses to lead to the supposition that the el eths mean two distinct trees, we come to the conclusion that only one tree is meant, and that is the elm. The English translators not finding a tree to take the place of the second Greek Ptelea, rendered it teil tree, which, if retained, must be considered a second name for the elm.

The elm, *Ulmus campestris,* is a type of the family *Ulmaceœ,* and grows in Middle and Southern Europe; it attains a great age and size, and, although it is called the English elm, it does not ripen its seeds in this country, and is not found wild. It is therefore a doubtful native.

Ash (Heb., Oren)

"He planteth an *ash,* and the rain doth nourish it." - Isa. 44:14; 712 B.C.

The ash tree is a native of this country and many parts of Europe; it is also found in Western Asia, but is not recorded wild in Palestine. It is therefore doubtful whether the Hebrew word *oren,* translated ash, is referable to the common ash tree, *Fraxinus excelsior;* but as there are three other species stated to be natives of Palestine, namely, F. *Ornus, F. parviflora,* and F. *Syriaca,* all of which are smaller

than the European one, the text may have reference to one or other of these. F. Ornus yields the manna of commerce (See Manna). In some versions of the Bible, the Hebrew word ores is translated "pine tree," which is supposed by many commentators to be correct, but there is no good evidence in support of this view.

Plane Tree

"I was exalted like a palm tree in Engaddi, and as a rose plant in Jericho, as a fair olive tree in a pleasant field, and grew up as a plane tree by the water." - Ecclesiasticus 24:14.

Plane tree is only mentioned in the above verse in the Apocrypha, and must not, be confounded with the tree commonly known in Great Britain as the plane tree, one of the Maples, *Acer Pseudo-platanus* (See Chestnut).

Chestnut (Heb., Armôn)

"And Jacob took him rods of green poplar, and of the hazel and *chestnut* tree." - Gen. 30:37; 1745 B.C. "And the *chestnut* trees were not like his branches." - Ezek. 31:8; 588 B.C.

Although the chestnut tree, *Castanea vesca,* is a native of the Caucasus and other parts of Western Asia, it is not found wild in Palestine, and, therefore, the word chestnut in our Bible is now considered to be a wrong translation of the Hebrew word *armôn*, now admitted by the best authorities to be the plane tree, Platanus orientalis, which is wild in Lebanon and other parts of Palestine, and is also a tree of the plains, growing chiefly by streams and on the banks of the Upper Jordan. In some places it grows to a large size, a tree in one of the streets of Damascus measuring upwards of 40 feet in circumference. It appears to have been introduced into this country more than three hundred years ago, and is well known as the oriental

plane, a noble tree, attaining with us the height of 50 or 60 feet. When standing singly, it generally produces wide-spreading branches, and is highly ornamental in parks and gardens.

P. acerifolia, also a native of Syria, is considered by some botanists to be a distinct species; it grows more upright than *P. orientalis,* and is less disposed to produce spreading branches. It is common in the parks about London, and, like the tree of Damascus, is at home in the streets and squares, and on the Thames Embankment. Its growing so freely in smoky cities like London, is no doubt due not only to the deciduous leaves, but also to its outer coat of bark falling away yearly. It thus gets rid of the coating of soot; the trunks then appear white, from which is derived its Hebrew name armors, which means naked.

Poplar (Heb., Libneh)

"And Jacob took him rods of green *poplar."* - Gen. 30:37; 1745 B.C. "They sacrifice upon the tops of the mountains, and burn incense upon the hills, under oaks and *poplars* and elms." - Hos. 4:13; 780 B.C.

The genus *Populus* belongs to the willow family, *Salicaceæ,* which consists of about 170 species, with few exceptions natives of the North Temperate Zone, even extending to high latitudes. They are all deciduous trees, varying in height from 30 to 50 or more feet.

There are at least four kinds of poplars, natives of Syria; they are common in Palestine, growing with willows in the vicinity of rivers. Many are fast growers, especially when young, making long straight shoots, which may be called rods, and would be well suited for Jacob's purpose. Some commentators, however, consider them to have been shoots of the storax tree (see stacte); but this is not

likely, as the storax is a short-branched scrubby tree. This supposition is consequent on the Hebrew word *libneh,* meaning white, the leaves of the storax being white, similar to the leaves of the white poplar, *Populus alba,* a large tree with spreading branches, and extensively planted in many parts, especially about Damascus, for the shade it affords in summer. I have stated under mulberry that the Hebrew word translated mulberry should have been poplar, and Dr. Royle considered the trembling poplar, *P. tremula,* to be the tree. This view is also entertained by the Rev. H. B. Tristram, who says, "There is every reason to believe that the aspen or trembling poplar is the tree intended." It is a slender, erect, branched, somewhat pyramidal, deciduous tree, attaining the height of 40 or 50 feet. Its leaves are nearly round, thin, and smooth, alternate, and obliquely attached by a slender footstalk, which allows them to move freely in a quivering manner, even when the air is still. Their rustleing against one-another gives an audible sound which may be heard at some distance, and explains the going "at the top of the mulberry tree." (See Mulberry). It is common in some parts of Palestine and throughout Europe; it is also a native of this country, and is generally planted with alders and willows in wet places.

Willows. (Heb., Arâbim; in Ezek., Tzaphtzaphah)

"And ye shall take you on the first day the boughs of goodly trees, branches of palm trees and the boughs of thick trees, and willows of the brook." - Lev. 23:40; 1490 B.C."The willows of the brook compass him about." - Job 40:22; 1520 B.C."We hanged our harps upon the willows in the midst thereof." - Psa. 137:2. 570 B.C. "That which they have laid up, shall they carry away to the brook of the willows." - Isaiah 15:7; 726 B.C. "And they shall spring up

as among the grass, as willows by the water courses." - Isa. 44:4; 712 B.C. "He placed it by great waters, and set it as a willow tree." - Ezek. 17:5; 594 B.C.

Willows are well known in this country under the names of osiers, sallows, and weeping willows; they belong to the genus *Salix* of Linnæus, of which there are above one hundred different kinds. With the allied genus *Populus* (poplars), they form the family *Salicaceæ.* They vary in size from small creeping shrubs to lofty trees, all being natives chiefly of the temperate regions of the Northern Hemisphere, some extending to the Arctic zone. They generally grow in marshy places, near brooks, and on, river banks. These habitats correspond with the places of growth of the willows mentioned in the above verses. Although there are several kinds of willows growing in Palestine, it is, nevertheless, difficult to determine any special species.

Salix Ægyptiaca, S. cinerea, S. fragilis, and *S. octandra,* have been observed; and it is quite probable that the willow mentioned in Leviticus was a slender kind, which we call a withy, useful in fastening together the branches of the other trees used for forming the booths. The weeping willow, *S. Babylonica,* is also common, and is to be seen growing over wells. Although this has, received the name, *S. Babylonica,* it has not been seen growing by the streams of Babylon, and it is now generally understood that the willows upon which the Jews hanged their harps were not willow trees but poplars *(Populus Euphratica).*

There is, however, no evidence in support of its not being a willow, and it is supposed by superstitious people that the weight of the harps caused the branches to become pendulous. This became permanent and hereditary, thus accounting for the origin of the weeping willow. It is

common in many parts of Asia, and in China is greatly planted as an ornamental tree. In this country it is recorded to have been cultivated in 1692, in the Royal Gardens, Hampton Court, then patronized as a botanic garden by William III., and superintended by the then celebrated botanist, Plukenet, who, as regards the introduction of exotic plants, may be called the Sir Joseph Banks of that period.

The Rev. H. B. Tristram suggests that the beautiful flowering shrub, *Nerium Oleander,* may with propriety be considered one of the willows of the brook; it is a willow-leaved shrub or small tree, but differs from willows in its leaves being opposite. It forms extensive thickets in some parts of the valley of the Jordan, and "in many of the streams of Moab it forms a complete screen, which the sun's rays can never penetrate."

Hazel (Heb., Luz)

"And Jacob took him rods of green poplar, and of the *hazel* and chestnut tree." - Gen. 30:37; 1745 B.C.

The hazel, *Corylus wellana,* belongs to the oak family, *Cupuliferæ,* by some termed *Corylaceæ.* It is common through Europe and Western Asia. In general it retains the character of a shrub, producing many stems or rods; but when growing singly, it assumes the character of a tree, some 20 or 30 feet high. It is common in Lebanon and other parts of Palestine; and, although its stems are well suited to form one of the rods of Jacob, it is nevertheless supposed by some commentators that the word *luz*, translated *hazel* in the above verse, means the almond tree. The authority for this supposition is that the present Arabic name of the almond tree is the same as the Hebrew word translated hazel in our Bibles. The Rev. H. B. Tristram says he did

not observe the hazel in Mesopotamia, the country where Jacob was at the time he made use of the rods. It is therefore most probable that the rods were those of the almond tree.

Bay Tree (Heb., Ezrâch)

"I have seen the wicked in great power, and spreading himself like a green *bay tree.* - *Psalms* 37:85; 1048 B.C.

The bay tree here spoken of may probably be the *Laurus nobilis,* well known in this country as the sweet bay. It is a native of the south of Europe and the Mediterranean regions generally, also of some places in Palestine, being abundant on Mount Carmel and about Hebron.

It is an evergreen tree, attaining the height of 40 or 50 feet, of compact habit, and, therefore, the word "spreading" is scarcely applicable to it; indeed, some authors think that the word translated green bay tree in the above verse, may mean any evergreen tree, or no tree at all, as the Hebrew word *ezrâch* occurs in fourteen other places in the Bible, where it is used to signify a native, as opposed to a stranger or foreigner.

Myrtle (Heb., Hadas)

"Go forth unto the mount, and fetch olive branches, and pine branches, and *myrtle* branches, and palm branches, and branches of thick trees, to make booths, as it is written." - Neh. 8:15; 445 B.C.

Besides the above quotation, myrtle is mentioned three times in the prophecies, chiefly in a symbolical sense. It continues to be used to this day by the Jews at the Feast of Tabernacles, and sprigs of three leaves in a whorl (which are not common), are highly valued for that ceremony in this country.

The myrtle, *Myrtus communis,* is the type of the extensive family, *Myrtaceæ,* which consists of shrubs and

trees abounding in the tropical and sub-tropical regions. It is believed to be a native of Western Asia, is common in Palestine, and has become naturalized in most countries bordering the Mediterranean. It is the only representative of the family in Europe, its nearest ally being the pomegranate, which is by some botanists placed in *Myrtaceæ,* while others include it in a distinct family, named *Granataceæ.*

In favorable situations the myrtle forms a small tree, 20 to 30 feet in height, but it more often assumes the character of a straggling bush. Its wood is hard and mottled, often knotty, and is much esteemed in turnery. Its sweet-smelling leaves and flowers are used as perfumes, and for making sachet powders; a fragrant oil is also obtained from it. It was introduced to this country about three hundred years ago, and continues to be a favorite with all classes; it is, however, not sufficiently hardy to stand our severe winters without protection, except in sheltered situations.

Box-Tree (Heb., Teasshûr)

"I will set in the desert the fir tree, and the pine, and the *box* tree together." - Isaiah 41:19; 712 B.C. "The glory of Lebanon shall come unto thee, the fir tree, the pine tree, and the *box* together, to beautify the place of my sanctuary." - Isaiah 60:13; 698 B.C.

The Box, *Burns sempervirens,* is a small evergreen tree, or often a bush, having small, smooth, shining, elliptical leaves. It belongs to the family, *Euphorbiaceæ,* and seldom exceeds the height of 20 to 30 feet, in this country rarely more than 10 or 12. It is extensively cultivated as an ornamental shrub, and it appears by the above quotations that the same use was made of it in the time of Isaiah.

It has a wide geographical range in Europe and Asia, extending eastward to China and Japan. In Palestine it is

found only in the north, chiefly in Lebanon. In this country it is considered to be indigenous on Box Hill, in Surrey.

Its stem seldom exceeds 6 to 8 inches in diameter; the wood is very hard, takes a fine polish, and is valued for wood engraving, turnery, making mathematical instruments, and more. The chief imports are from ports in the Mediterranean and Black Seas, but on account of the great demand it is beginning to get scarce in those parts.

In Ezek. 27:6, in alluding to ships, we read, that the benches were made of "ivory, brought out of the isles of Chittim," modern Cyprus. As ivory is not a native product of any part of the Mediterranean region, it would have to be imported from the south, and would consequently be too expensive an article to make benches with; it is, therefore, supposed that they were made of box-tree wood, and inlaid with ivory.

In Smith's "Dictionary of the Bible," it is stated that in our authorized version the Hebrew word *teasshûr* is translated box-tree, and in the Vulgate buxus; but that it "is properly a species of cedar called *Scherbin,* to be recognized by the small size of its cones, and the upward tendency of its branches." No satisfactory explanation is, however, given in support of this view; and we know of no coniferous trees growing on Lebanon to answer for the *teasshûr.*

Ebony (Heb., Hodnim)

"Many isles were the merchandise of thine hand: they brought thee for a present horns of ivory and *ebony*." - Ezek. 27:15; 588 B.C.

The hard black wood known as ebony at the present day, is furnished by several species of *Diospyros,* a genus of the family *Ebenaceæ.* They are large but slow-growing trees, having simple, entire leaves, and small bell-shaped flowers.

They are natives of India, Ceylon, and Mauritius; and there can be no doubt but that the ebony mentioned in the above quotations was either obtained from the Peninsula of India or from Ceylon, and conveyed in ships up the Red Sea.

The ebony of India is furnished by *D. Ebenaster* and *D. melanoxylon;* and that of Ceylon by *D. Ebenum.* The outer wood is white and soft, but when old the interior becomes hard and black, and constitutes ebony. At the present day it is valued for cabinet work, turnery, and fancy articles.

The genus, *Diospyros,* is represented in the south of Europe by *D. Lotus,* a small tree, bearing a fruit called the date plum, which is supposed to have been one of the fruits eaten by the people, called Lotophagi.

Cedar (Heb., Erez)

The word cedar occurs fifty-one times in the Bible in the Old Testament only; it is spoken of simply as cedar, or as cedar wood, cedar tree, or cedar of Lebanon; and with the exception of the cedar wood mentioned in the following verses, the whole of the others are considered to have reference to the tree well known as the cedar of Lebanon.

1. Cedar Wood

"Then shall the priest command to take for him that is to be cleansed two birds alive and clean, and cedar wood, and scarlet, and hyssop:…As for the living bird, he shall take it, and the cedar wood, and the scarlet, and the hyssop, and shall dip them and the living bird in the blood of the bird that was killed over the running water. And he shall sprinkle upon him that is to be cleansed from the leprosy seven times." - Lev. 14:4, 6, 7; 1490 B.C. "And the priest shall take cedar wood, and hyssop, and scarlet, and cast it

into the midst of the burning of the heifer." - Num. 19:6; 1471 B.C.

With regard to the cedar wood mentioned in these verses, the Israelites at that time were in the wilderness, and far away from Lebanon, consequently the cedar of Lebanon was unknown to them, and the name cedar must therefore have been first given to some tree growing in the wilderness. As all woods called cedar, especially those belonging to the family of Coniferce, are more or less odoriferous, it may be supposed that it was the wood of some species of Coniferce, such as that of Juniperus, of which there are several kinds growing in the wilderness, as *J. oxycedrus, J. Phœicia.* and *J. Sabina,* which are bushes or small trees, common in the desert regions of Western Asia.

With regard to the cedar wood, scarlet, and hyssop, ordered to be dipped into the blood and sprinkled over the leper, it is reasonable to suppose that they formed a kind of brush, or that each formed a separate brush, the cedar being probably a branch of some small, close-leaved Juniper, such as *J. Sabina,* which, if tied together, could be made into a brush. Or, if we view it literally, it was a piece of solid wood, and its being burnt, we must suppose, was for the purpose of assisting to destroy the effluvia that would rise on the burning of the bird.

2. Cedar of Lebanon (Heb., Erez)

"And Hiram king of Tire sent messengers to David, and *cedar trees,* and carpenters, and masons: and they built David an house." - 2 Sam. 4:11; 1043 B.C. "And Solomon sent to Hiram, saying… Now therefore command thou that they hew me *cedar trees* out of Lebanon." - 1 Kings 5:6; 1014 B.C. "The righteous shall flourish like the palm tree: he shall grow like a *cedar* in Lebanon." - Psa. 92:12.

The cedar of Lebanon, *Cedrus Libani,* belongs to the cone-bearing family, *Coniferce.*

The ancient and famed locality of the cedar on Lebanon is now reduced to about a quarter of a mile in extent, seated on an elevated plain, 6,172 feet above the level of the sea. Here grow in nine groups about four hundred trees, which vary from 18 inches to 14 feet in diameter; the largest is about 100 feet in height, and is supposed to be 2,500 years old. This, if correct, proves that none of the present trees were growing in the time of Solomon. Other groves, and even whole forests of cedar, have of late years been discovered in the northern parts of Lebanon and Taurus; this tree extends eastward through the Caucasus into the Himalayan range of Northern India, where it assumes a different aspect, and is described by botanists as *Cedrus Deodara.* It is also represented in the Atlas range of Northern Africa by *C. Atlantica,* which, with the Deodar has, during the last fifty years, been introduced into this country. They are ornamental, hardy trees. *C. Libani* was introduced about two hundred years ago, and large specimens, some measuring 15 to 20 feet in circumference, are recorded. The wood is highly odoriferous, but is soft, and not much valued in this country.

It, however, appears to have been highly valued for its durability in the time of Solomon, as also by the king of Assyria, who obtained cedar wood for building his palace in Nineveh. Fragments of cedar wood, about 3000 years old, were found in the ruins of Nineveh by Mr. Layard, and are now in the British Museum. They were first supposed to be yew; but a careful microscopic examination made by Mr. Carruthers, with the odor they emitted when burnt, proved it to be cedar wood.

Fir (Heb., Beroth, Berosh)

"And David and all the house of Israel played before the Lord on all manner of instruments made of *fir* wood." - 2 Sam. 4:5; 1042 B.C. "So Hiram gave Solomon cedar trees, and *fir* trees according to all his desire." - 1 Kings 5:10; 1014 B.C. "And the two doors were of *fir* tree." - 1 Kings 4:34; 1005 B.C. "I am come up to the height of the mountains, to the sides of Lebanon, and will cut down the tall cedar trees thereof, and the choice fir trees there of." - 2 Kings 19:23; 710 B.C."Send me also cedar trees, fir trees, and algum trees, out of Lebanon." - 2 Chron. 2:8; 1015 B.C."They have made all thy ship boards of fir trees of Senir: they have taken cedars from Lebanon to make masts for thee." - Ezek. 27:5; 588 B.C.

From the time of Samuel to the end of Bible history, the word fir occurs seventeen times, generally in connection with Mount Lebanon. Solomon asks King Hiram to send him cedar trees and fir trees out of Lebanon, but it is questionable whether in all cases the word fir means one kind of tree. In the Septuagint, the two Hebrew words, *beroth* and *berosh* are indifferently rendered *pine, cypress,* and *juniper,* all of which, admitting the pine to be the same as the fir, grow on Mount Lebanon.

Fir trees and pine trees, so called at the present day, belong to the family *Coniferce,* thus named on account of the fruit being in the form of a cone, which varies in size from a few inches to nearly 2 feet in length, and is formed of hard woody scales lying over one another, and including the seeds.

By some botanists the word *Pinaceæ* is adopted as the name of the family instead of *Coniferce,* of which there are many species, natives of both the Old and New Worlds,

some attaining a great size and height, even exceeding 300 feet. All were originally included under the genus Finns of Linnæus but botanists have since arranged them under at least two well marked genera, Finns and *Abies*, distinguished by the first having narrow needle-shaped leaves, produced in fascicles of from two to five; the second having short linear leaves, growing singly, closely set on the branches, generally in two more or less distinct rows. In this country the first are called pines, and are represented by Pinus sylvestris, well known as "Scotch fir," but which should be more properly "Scotch pine;" the second, firs, being represented by Abies excelsa, the well-known spruce fir, not a native of this country, but abundant in Sweden, Denmark, and Norway, and the mountain regions of Middle Europe generally.

This interchange of names leads to some degree of difficulty in determining the fir and pine trees of the Bible; but as no species of Abies has been sound on Lebanon or in other parts of Palestine, we are led to believe that fir and pine are names for one kind of tree only, and that the "choice fir trees" obtained by Solomon out of Lebanon were *Pinus Halepensis,* a tall tree, similar in habit of growth to the Scotch fir, which some travelers have taken it to be. It is abundant on the slopes of Lebanon and Senir (Hermon), and forms forests in Gilead. It was introduced into this country about the middle of the seventeenth century, but is rather tender for this climate, and does not make a handsome tree.

Another fir, *Pinus maritima,* grows along the coast of Palestine, as also *P. Pinea,* or stone pine. Both are common to Southern Europe; the large and nutty seeds of the latter forming an article of food in many parts.

The timber of fir and pine trees is as extensively used at the present day for building and furnishing purposes as it was in Solomon's time.

Pine Tree (Heb., Tidhar)

"Go forth unto the mount, and fetch olive branches, and *pine* branches *(etz shamen),* and myrtle branches, and palm branches, and branches of thick trees, to make booths." - Nehemiah 8:15; 445 B.C. "I will set in the desert the fir tree and the pine, and the box tree together." - Isaiah 41:19; 712 B.C. "The glory of Lebanon shall come unto thee, the fir tree, the pine tree, and the box together." - Isaiah 60:13; 698 B.C. It has been shown under fir, that the words fir and pine are in modern botanical nomenclature indiscriminately applied to species of both divisions of the Linnaean genus *Pinus,* namely, *Pinus* and *Abies,* the first being generally called Pines, and the latter Firs; thus, *Abies excelsa* is well known as the spruce fir. It has, however, been shown under fir, that Pinus Halepensis is the fir tree of Lebanon; but as there are no species of Abies (as represented by the spruce fir) found in Palestine, it becomes impossible to say what tree the word tidhar of Isaiah refers to. In our version this word is translated pine, which word does not occur in the Bible till more than three hundred years after Solomon had had fir trees from Lebanon. Isaiah then says, "The glory of Lebanon shall come unto thee, the fir tree, the pine tree, and the box together." Two distinct coniferous trees are here specially mentioned. As the pine is not mentioned in Solomon's time, being first and only noticed by Isaiah, and as it is quite probable that Isaiah was not practically acquainted with the trees growing on Mount Lebanon, and that his only knowledge of them was derived from the Books of Kings and Chronicles, or what

he might hear of them at Jerusalem, and as he speaks of them only figuratively, it is impossible to determine what he calls tidhar, translated pine tree in our version.

Two hundred and forty years after Isaiah, Nehemiah directs "pine branches" to be used for making booths. This does not assist us in any way in determining the kind of tree from which these branches were to be obtained; and the difficulty is increased by finding that the Hebrew word for pine branches, etz shamen, is also in our version rendered "oil tree" in Isa. 41:19 (see Oil Tree). The flat branches of fir being well adapted for covering booths, may lead us to suppose that in Nehemiah's time some species of Abies grew in Palestine, and that its absence at the present time may be consequent on the great destruction that has befallen the forests of Palestine under its present rulers.

After Nehemiah the word pine does not again occur in the Bible, but about five hundred years later it is mentioned by Josephus, who says Solomon had pine wood brought in ships from Ophir, which "was made use of partly for pillars and supports to the king's temple and palace, partly for musical instruments, as harps, cymbals, psalteries, and the like, for the Levites to glorify God upon. It is to be noted, that for size and beauty, Solomon had never seen any of this sort of wood comparable to it before. This was none of the wood that passes commonly upon the world for pine in the way of trade. This was somewhat of the grain of a fig tree, only a little whiter, and more glossy." On considering that Josephus wrote eleven hundred years after Solomon had trees from Ophir (see Almug), and as we have no account of any being imported after that, Josephus's description must be received with some degree of reservation, but what he says is sufficient to show that in his time a kind

of wood was known in the "way of trade" by the name of Pine. In a recently-published edition of Josephus, instead of the word Ophir it is said that "Solomon had pine trees from Aurea Chersonesus;" if Chersonesus means Cherson, in the Crimea, then we are induced to believe that king Hiram sent ships into the Black Sea to bring timber trees for Solomon, but if such is the case it is not alluded to in the Bible.

Canon Tristram thinks the word *tidhar* may be the elm, but there is nothing in the text in support of this; it may be any large tree. The root of the word means "to revolve," which may be considered to allude to the branches of fir and pine being produced in whorls.

Cypress (Heb., Tizza)

"He heweth him down cedars, and taketh the *cypress* and the oak." - Isa. 44:14; 712 B.C.

Several trees and shrubs have, in modern times, received the name of cypress, which have nothing to do with the cypress of the above text, or with the plant rendered cypress in marginal Bibles (see camphire). In the Apocrypha we read "I was exalted like a cedar in Lebanus, and as the cypress tree upon the mountains of Hermon … And as a cypress tree which groweth up to the clouds." - Eccl. 24:13; 1:10. This, with the words of Isaiah, "He heweth him down cedars, and taketh the cypress and the oak," is sufficient to lead us to believe that the cypress is a large, tall-growing tree, and that it grew in company with the cedar and oak on Mounts Lebanon and Hermon. The cypress is not mentioned in the Bible as having been used by Solomon in the building of the Temple; but, according to Josephus, Hiram sends word to Solomon, "I will give order to cut down, and to export such quantities of the fairest cedars

and cypress trees as you shall have occasion for." It may also reasonably be supposed that the hewers of wood would not spare the fine cypress trees of Lebanon. The word cypress, like that of cedar, is supposed by some to be the name of more than one special tree of the fir family; it therefore becomes very doubtful what tree is alluded to in the above quotations.

The tree now called cypress is the *Cupressus sempervirens* of Linnaeus, well known as the evergreen cypress, of which there are two forms; the branches of one, *C. horizontalis,* spreading horizontally, the branches of the other being upright and imparting to the trees a pyramidal form. The latter is known as the pyramidal cypress, and although it is abundantly cultivated in Western Asia and North-west India, it has not been observed truly wild; it is, therefore, supposed to have originated as a variety, and to have early found favor on account of its compact pyramidal habit. In Palestine it attains the height of from 50 to 60 feet; and at Smyrna one is mentioned 120 feet in height, and with a girth of 8 or 10 feet. With regard to the horizontal variety, it is said to grow wild on the west side of Lebanon, in some parts of Asia Minor, and on the mountains of Crete and Cyprus (from which it takes its name). It there also attains a considerable height. Either of these forms may answer for the cypress tree "that groweth up to the clouds." The wood is very hard and durable, and was much used by the ancients for making their idols, and is said to have been used by the Phoenicians and Greeks for shipbuilding.

The pyramidal form is extensively planted in Mahomedan and Armenian cemeteries. It was introduced to this country about 300 years ago, and is well known as

an ornamental small tree, seldom growing more than 20 feet high. It is frequently injured in severe winters.

Thyine Wood (Heb., Etz Aboth; Greek, Thyia.)

"The merchandise of gold, and silver, and precious stones, and of pearls, and fine linen, and purple, and silk, and scarlet, and all *thyine* wood." - Rev. 18:12; 96 A.D.

The thyine wood of the above verse is believed to be the wood of a tree named by Linnæus *Thuja articulata,* which is now ranked by modern botanists as a distinct genus, under the name of *Callitris quadrivalvis,* a small tree belonging to the cypress section of the *Coniferce* family. It is a native of Algeria, and other parts of the Atlas range of North Africa. It seldom exceeds the height of 30 feet, and has hard dark-colored fragrant wood that takes a fine polish, and was used for ornamental cabinet work in ancient Rome; it is stated that Cicero had a table made of it that cost £9,000, and even much higher prices were given, as recorded by Pliny. Ornaments made of this wood are to be seen in the museum at Kew, presented by the late Prince Napoleon Jerome. Being mentioned by John among the riches of Babylon, it may be supposed that it was conveyed by Phoenician ships to Tire in Syria from Carthage, or some other port on the African coast, and from thence found its way to Babylon. It yields a very odoriferous resin, known as sandarach, which is highly prized by the Greeks and Romans for incense.

Thyine is the last vegetable production mentioned in Scripture, and is supposed by some to be the Almug spoken of by Solomon, which see.

Juniper (Heb., Rothem)

"But he himself went a day's journey into the wilderness, and came and sat down under a *juniper* tree." - 1 Kings

19:4; 906 B.C. "Who cut up mallows by the bushes, and *juniper* roots for their meat." - Job 30:4; 1520 B.C. "Sharp arrows of the mighty, with coals of *juniper."* - Psalms 120:4; 1058 B.C.

It must be understood that the Juniper spoken of in the above quotations has no relation to the plant common throughout Europe, and known as Juniper in this country; but is a species of broom originally described under the genus *Genista, G. monosperma,* and now separated as a distinct genus under the name of *Retama,* its Hebrew name. Of this genus there are several species common in the regions of the Mediterranean, the Syrian species being *R. Rœtam.* Its habit of growth is similar to that of the common broom, but its branches are longer and more flexible, forming a dense bush 10 or 12 feet high.

Although its leaves are very small and scanty, it nevertheless forms an agreeable shade. It is abundant in Palestine, growing in rocky places and ravines, and is common round the Dead Sea and deserts of Syria. In many places in the Wilderness it is the only bush that affords shade.

Its roots, like those of our common broom, are nauseous in the extreme, and even to a degree poisonous, therefore we may reasonably suppose they were not the Juniper roots eaten for meat, mentioned in Job; the part eaten may, however, have been a species of *Cynomorium,* which grows on the roots of the Retam in the same manner as the broom rapes *(Orobanchœ),* grow on the broom roots in this country, and as *Cynomorium coccineum* has been observed growing in abundance on the roots of the Retama in the neighborhood of the Dead Sea, and as it, or an allied species, is eaten in times of scarcity, especially in the Canary

Islands, it seems quite probable that it was the "Juniper roots" alluded to in Job. *Cynomorium coccineum* belongs to the family *Balanophoreæ,* of which there are about thirty known species, most of which are Fungus-like parasites, chiefly growing on the roots of other plants. *C. coccineum* is cylindrical and fleshy, about a foot in height of a red color, covered with imbricate scales in the place of leaves, and bearing inconspicuous flowers on its apex. It was originally known by the name of *Fungus melitensis,* and was supposed to grow only in the island of Malta. It was so highly prized for its medical virtues that a military sentry was placed over the spot where it grew.

The "coals of Juniper" is explained by the *Retam* being extensively employed for making charcoal, which is said to be of fine quality, and forms an important article of trade between the Bedouins and Egyptians.

Shittah Tree and Shittim Wood

In the twenty-fifth and twenty-sixth chapters of Exodus (1491 B.C.), and also in Deuteronomy, shittim wood is mentioned above twenty times, in all cases in connection with the Ark of the Tabernacle, which was ordered to be made of shittim wood; as well as the altar and table of the Tabernacle.

The Shittah tree, *Acacia Segal,* belongs to the *Mimoseæ* section of the family *Leguminosæ.* This, and the allied species yielding gum arabic, are *Acacia arabica* and *A. nilotica,* spiny trees, generally of small growth, abounding in the deserts of Eastern Africa, Arabia, and Syria, and in the Peninsula of Sinai. The wood of the shittah is very hard, and valuable for cabinet work.

In the more favorable region of the Dead Sea, it attains a considerable size. In the desert it is often to be seen in

the form of a bush, with strong white twin spines, an inch and a half in length.

Canon Tristram says, "The wild *Acacia* or *Bunt* everywhere represents the *seneh* or *senna* (Hebrew) of the burning bush." This, however, seems very problematical, as there is no evidence in support of such decisions; all we have to judge by, is that a bush was on fire and was not consumed. The Shittah tree is represented in this country by *Robinia pseud-acacia,* the Locust tree of North America. It was introduced to this country about two hundred years ago; it is quite hardy, and attains a considerable size, a tree still standing in the original arboretum at Kew being 12 feet 10 inches in circumference a little above the ground. The wood is hard.

Husks (Greek, Keratia)

"And brought the man of God bread of the firstfruits, twenty loaves of barley, and full ears of corn in the *husk* thereof." - 2 Kings. 4:42; 895 B.C. "And he would fain have filled his belly with the *husks* that the swine did eat." - Luke 15:16; 33 A.D.

The word husk is the common name for the outer covering of grains of corn, and many kinds of soft-skinned fruits; and is especially applicable to the empty pods of peas, beans, and pulse plants in general, many of which furnish a considerable amount of food for man and beast, the pods of the scarlet runner being a familiar example. There seems no reason for doubting that the husks of the parable were the pods of *Ceratonia Siliqua,* a small tree common in Palestine, and the regions of the Mediterranean generally, growing in almost every kind of situation, and resisting extreme drought. It seldom exceeds 30 feet in height, sometimes has a stem a foot or more in diameter,

and has winged shining leaves similar to those of the Ash, but the leaflets are blunter and more rigid. The flowers are small and yellow, and have a fœtid odor. It belongs to the family *Leguminosæ,* and produces generally pods 6 to 8 inches in length, in the form of a curved horn (hence the name Ceratonia), but somewhat flat, and from an inch to an inch and a half in breadth. They contain numerous pea-like seeds, included in an agreeably flavored mucilaginous saccharine pulp, which is ground up with the pods and used for making sweetmeats. In all countries where the tree grows the pods are extensively used for feeding cattle and swine, and in times of scarcity are used for human food. Of late years they have been extensively imported to this country for feeding cattle.

The tree is familiarly known by the name of Carob, and also by that of St. John's bread. The sweet pods are supposed by some to be the locusts which John the Baptist ate while in the wilderness. It is, however, now generally understood that his food was the insect well known by the name of locust, and which, according to Lev. 11:22, was one of the flying and creeping things which the Israelites were permitted to eat. Be that as it may, it appears that the locusts eaten by John were, by early Christians, supposed to be the pods of the Carob tree. The name Locust Tree had been given by early settlers in America to trees bearing similar pods, the locust trees of North America being *Robinia pseud acacia* and *Gleditschia triacanthos,* and that of West Indies and Tropical America *Hymenæa Courbaril.*

Branches and Boughs

"And ye shall take you on the first day the boughs of goodly trees, branches of palm trees, and the boughs of thick trees, and willows of the brook; and ye shall rejoice

before the Lord your God seven days." "Ye shall dwell in booths seven days." - Lev. 23:40,42; 1490 B.C."Go forth unto the mount, and fetch olive branches, and pine branches, and myrtle branches, and palm branches, and branches of thick trees, to make booths, as it is written." - Neh. 13:15; 445 B.C.

These verses require no explanation, the uses of boughs and branches being for the purpose of forming booths to live in during the Feast of the Tabernacle. A different opinion is, however, entertained by the Hebrew Rabbis, who say that the "boughs of goodly trees" should be fruit of goodly trees, and that the goodly trees were the citron trees; but there is no evidence to show that the citron was known in the time of Moses. According to Josephus, the fruit of the citron must have been abundant, and extensively used in the ceremonies of the Feast of Tabernacles about 100 years before the Christian era: he relates that King Alexander Jannæus, in a fit of tyranny, so annoyed the people during the Feast of Tabernacles that they pelted him with citrons. The use of citrons is still continued in the same ceremony by the modern Jews. It is considered an emblem of all good things that God has given them.

The Citron, *Citrus medica,* belongs to the Orange family. It is a spiny, much-branched tree, seldom exceeding 12 feet in height, having smooth laurel-like leaves, with an oblong orange-like fruit, from five to six inches long, and with a rough yellowish rind. Some consider it to be the "apples of gold" spoken of in Proverbs 25:11, the Hebrew name for citron being nearly the same as *tappuach,* which is rendered apple. It is, however, doubtful whether it grew in Palestine in the time of Solomon.

As the specific name implies, it is considered to be a native of Media, but as it is, with the orange and lemon, found wild in Upper India, it is to be inferred that it was early introduced into Persia and Media, where it is recorded to have been cultivated before the time of Alexander the Great, ultimately into Palestine, and during the Crusades into the south of Europe, where it is extensively cultivated, large quantities of the fruit being exported to this country from Spain and ports of the Mediterranean.

Algum and Almug

It appears that the original translators of the Bible were unable to identify any trees bearing the above names in Palestine or other countries, and most commentators consider the two names to refer to one kind of tree only, but this seems irreconcilable with the context of the two verses, and as, according to Bible chronology, there are three years difference of time between the two texts, we treat them separately.

Algum

"Send me also cedar trees, fir trees, and algum trees, out of Lebanon." - 2 Chron. 2:8; 1015 B.C.

The reading of the above verse shows that the tree called by Solomon Algum, grew on Lebanon along with the Cedar and Fir, and that it was a large tree, but we have no further information to assist us in determining what this tree was. As the Cypress is not spoken of in the time of Solomon, and as it grew on Lebanon and is a large tree, it may probably have been the tree called by Solomon Algum, or the alguni may have been *Juniperus excelsa,* or the walnut; the latter being a large tree, with fine, hard-grained wood, which would, consequently, be a useful wood for the temple.

Almug

"And the navy also of Hiram, that brought gold from Ophir, brought in from Ophir great plenty of almug trees; And the king made of the almug trees pillars for the house of the Lord, and for the king's house, harps also and psalteries for singers." - 1 Kings 10:11-12; 1012 B.C.

Although the country called Ophir is not well identified with any country known at the present day, it seems to have been the name of some country or countries lying beyond the Straits of Babelmandeb, and may be considered to have been the coast of Africa on one side, and the peninsula of India on the other. The Almug trees probably came from the latter country, and were *Plerocarpus santalinus* known in modern times as Red Saunders wood, a large tree of the family *Leguminosæ.* Its wood is hard and heavy, of a red color, takes a fine polish, and is well suited for the purpose for which Solomon required it. Even at the present day it is used for making musical instruments.

Some suppose the Almug to be the Sandalwood tree, *Santalum album,* but it is much smaller than the preceding, and would scarcely be fit for pillars; it is, however, highly valuable for its odoriferous properties (see Aloes).

It may be here mentioned that all merchandise coming by ships from Ophir, up the Red Sea, would be landed at Solomon's Port, Ezion Geber, at the head of the Gulf of Akaba, and thence conveyed direct to Jerusalem.

Gopher Wood (Not Translated)

"Make thee an ark of *gopher wood*." - Gen. 6:14; 2448 B.C.

Commentators have failed to identify the Hebrew word gopher with any special tree. The general idea is that it was some coniferous tree; this is, however, mere conjecture, but

we may presume that the wood used depended upon the kind of trees that grew in the neighborhood where the ark was built; the locality, however, is unknown.

Palm Trees (Heb., Lamar; Greek, Phoenix.)

"And they came to Elim, where were twelve wells of water, and threescore and ten *palm trees:* and they encamped there by the waters." Exod. 15:27; 1491 B.C. "And ye shall take you on the first day the boughs of goodly trees, branches of *palm trees,* and the boughs of thick trees, and willows of the brook." - Lev. 23:40; 1490 B.C. "And the south, and the plain of the valley of Jericho, the city of palm trees." - Deut. 34:3; 1451 B.C. "And he carved all the walls of the house round about with carved figures of cherubims and palm trees and open flowers." - 1 Kings 6:29, also verses 32 and 35; 1005 B.C."Took branches of palm trees, and went forth to meet him." - John 12:13; 33 A.D.

Palms form an extensive family of plants termed *Palmaceæ,* which comprehend about a thousand different kinds. They have a wide geographical range, the greater number being found within or near the tropics, and rarely extending beyond 40° north and 35° south latitude. They belong to the class Endogens, having cylindrical stems, some rising to 100 or even nearly 200 feet in height; and bearing a crown of leaves, from the axils of which proceed bunches of small inconspicuous flowers contained in a sheath, which ultimately bursts. The leaves are of two forms, one set being simply winged, the others in the shape of a flabella or fan.

With the exception of the grass and pea families, Palms are the most important to man, to whom they supply food, drink, and nearly all the necessaries of life. The most

important are the Cocoa-nut *(Cocos nucifera),* and the Date, the palm of the Bible *(Phoenix dactylifera),* which has an extensive range from India through Western Asia, Egypt, and North Africa to the Atlantic: it may be called the food tree of the desert, furnishing food to millions of people.

According to age, it varies in height, often rising to 50 or 80 feet; it belongs to the section with winged leaves, which average from 15 to 20 feet in length, and are furnished with numerous, close-set, ribbon-like pinnæ about a foot or more in length, the lower becoming spiny; the fruit is produced in pendulous bunches from the axils of the leaves, each bunch weighing from 30 to 50 pounds.

In early times the date palm was abundant in Palestine; its Greek name, *Phœnix,* gave the name to that part of the country known as Phenicia. Some of the coins of Tire and Sidon have on them the figure of a palm; as has also a Jewish coin, struck in the time of Judas Maccabaeus; and to commemorate the conquering of the Jews and the destruction of Jerusalem by Titus, a coin was struck by Vespasian, representing the figure of a weeping woman sitting under a palm tree. The palm has thus become emblematical of Palestine. Jericho was called the city of palms, and Josephus relates that, in his time, there was a grove near the city seven miles in length, that they were abundant round the Sea of Galilee, and in the lower valley of the Jordan, and that they grew on the Mount of Olives and about Jerusalem. All these, with the exception of a few scattered trees, have disappeared; their fossilized and petrified stems are now the only remains of their once great abundance in these localities. In the oases of the desert of Sinai they grow in clumps and entangled thickets, and

furnish one of the principal articles of food for the Bedouin Arabs; the stones when ground form food for their camels.

The palm trees of Elim of the present day are described by the Rev. H. Bonar as follows: "The Palm trees were without number: I began to count them, but having reached the eightieth, I desisted. They extend for more than a mile and a half down the Wady, and must amount to several hundreds, at the lowest estimate. Most of them have four or five stems shooting up from one root. They have been goodly trees, as the prostrate trunks skewed, but have been cut down clean by the ground, and the present forest is made up of shoots, which give a stunted and shaggy appearance to the whole."

The bases of the leaves of the date palm being furnished with strong spines, the cutting of leaves from the tree requires to be cautiously done. It is difficult to reconcile this with "they took branches of palm trees, and went out to meet him;" it must, therefore, be supposed that they were young unexpanded leaves, 6 to 8 feet in length; which, being carried by a number of men in procession, would have an imposing appearance. This carrying of palm leaves on occasions of festivity was not new to the Jews, as we read in the Apocrypha, 2 Macc. 10:7, that on the restoration of the Temple by Judas Maccabeus the people "bore in their hands branches and fair boughs, and palms also, and sang psalms unto him that had given them good success."

Palm leaves are still used by the Jews at the Feast of Tabernacles. For use in this country they are chiefly obtained from Southern France and Italy. At Elche, in the province of Alicante, in Spain, date palm trees abound, and here, as well as in the countries previously named, for

religious purposes the leaves are blanched by tying straw round the crown of leaves before they expand.

The date palm appears to have been early introduced into Southern Europe, but although it grows freely, and attains a considerable height, its fruit does not ripen except under the most favorable conditions, as in South Spain.

The greatest importations of dates to this country come from Spain, Algiers, and other parts of the African coast of the Mediterranean.

Plants of the date palm are to be seen in most botanic gardens; one in the Palm House at Kew being upwards of 100 years old. The finest plant at the present time in this country is the one in the Duke of Northumberland's Garden at Sion House, which has a stem 35 feet high.

In India, palm wine or toddy, which, when distilled, becomes an intoxicating drink called *arrack,* is obtained by tapping several species of palms; this is also, though in a less degree, obtained from the date palm. This palm sap may probably be the "strong drink" spoken of in Judges 13:4; Isaiah 5:11; Luke 1:15, and other places in the Bible. (See Wormwood).

The date palm belongs to the twenty-second class of Linnaeus termed dicœcia, which is characterized by plants of the same species bearing stamens and pistils on separate plants - that is, male and female plants - and which appears to have been early known in countries where the fruit of the date tree forms an extensive article of food, for, in order to secure a good crop of dates, a bunch of flowers is removed from the male tree and suspended over the flowers of the female. In the wars between tribes the greatest calamity that can be inflicted on the conquered is the cutting down of their male date trees by the conqueror.

Fig (Heb., Teenah)

"And they sewed *fig* leaves together, and made themselves aprons." - Gen. 3:7; 4004 B.C.

"And they (the spies) brought of the pomegranates, and of the *figs*." - Numb. 13:23; 1490 B.C. "It is no place of seed, or of *figs,* or of vines, or of pomegranates." - Num. 20:5; 1453 B.C.

The words fig, figs, or fig tree occur forty-three times in the Bible, and there is no doubt but that all mean the fig tree of our time, except the first, mentioned in Genesis; there is no evidence to prove the leaves there spoken of to have been leaves of the fig tree mentioned in the other verses; and it is not until 2,500 years after Adam made aprons of fig leaves that we find the fig again alluded to.

In early times, as now, the fig tree was extensively cultivated in Egypt, Palestine, and other parts of Syria, and formed one of the principal articles of food for the people in those countries. In the 1 Sam. 25, we read that part of the present sent to king David consisted of 200 cakes of figs.

The fig tree is common throughout Palestine, both in a wild state and cultivated, there being extensive orchards of it near Jerusalem, and one or more trees almost in every garden. This verifies several texts in the Bible, such as every man sitting "under his own fig tree," and "eating of his own fig tree."

The botanical name of the fig tree is *Ficus Carica;* it belongs to the mulberry family *Moraceæ*; its mode of growth varies considerably, according to the nature of the climate and locality. It is often to be seen in the form of a long, straggling, branching shrub, even growing in rocky places, as may be seen about Jerusalem and other places in Palestine;

but in favorable situations it assumes the character of a tree, seldom, however, exceeding 20 or 30 feet in height. When standing singly it often forms a conspicuous object, its stem measuring 2 to 3 feet in diameter. In Palestine, such trees are often seen overshadowing wells. The fig tree is now cultivated in all regions of the earth suitable to its growth. Great quantities of the dried fruit are yearly exported from Turkey, Egypt, and ports on both sides of the Mediterranean.

It was early introduced into this country, but rarely assumes the character of a tree, except in places on the South coast and in the Isle of Wight, where it produces abundance of luscious fruit. The fruit so called is, however, not a true fruit, but what is termed by botanists a fleshy receptacle; its form, according to the sort, varies from nearly round to conical; it is attached by its narrow end to the branches, the broad end having a small opening like a pore; the flowers are numerous, small, and are attached round the interior sides of the cavity of the receptacle, the grit felt on eating a fig being the true fruit or seed.

Sycamore (Heb., Shikmin, Shikmoth)

"And cedars made he to be as the *sycamore* trees that are in the vale, for abundance." - 1 Kings 10:27; 992 B.C. "And over the olive trees and the *sycamore* trees that were in the low plains was Baal-hanan." - 1 Chron. 27:28; 1015 B.C. "He destroyed their vines with hail, and their *sycamore* trees with frost" - Psa. 78:47. "I was no prophet, neither was I a prophet's son; but I was an herdman, and a gatherer of *sycamore* fruit." - Amos 7:14; 787 B.C. "And he (Zacchæus) ran before, and climbed up into a *sycamore* tree to see Him." - Luke 19:4; 33 A.D.

The Sycamore tree *(Ficus Sycomorus)* is a strong-growing, robust tree, attaining the height of 30 or 40 feet, and sometimes having a circumference of 20 or more feet: the stem is short, dividing into large branches near the ground. It is an evergreen, having lobed leaves similar to those of the common fig, but smaller. The fruit is produced in great abundance from all parts of the young and old branches: it is of the same nature, only not so large, and much inferior to that of the common fig. Nevertheless, it is extensively used for food in Palestine and Egypt especially by the lower classes of people, at Cairo being hawked in the streets. Its wood is very soft and porous, but, notwithstanding this, is very lasting, as is proved by mummy cases made of it upwards of 3000 years ago, having been found in the Egyptian tombs. It is very abundant in Egypt, and is the largest exogenous tree in that country. It is planted for shade, and attains a great age; one tree at Matharee, near Cairo, dating, according to popular legend, from the time of the flight of Joseph and Mary with the infant Jesus into Egypt: tradition says they rested under its shade.

Sycamore

"And the Lord said, If ye had faith as a grain of mustard seed, ye might say unto this sycamore tree, Be thou plucked up by the root, and be thou planted in the sea; and it should obey you." - Luke 17:6; 33 A.D.

The sycamore and sycamore trees have, by some commentators, been considered to be the same tree; but it is now admitted, on good authority, that they are distinct, and that the sycamore is the mulberry *(Mores nigra)* (see Mulberry Tree).

Mulberry (Heb., Becalm)

"Thou shalt not go up; but fetch a compass behind them, and come upon them over against the *mulberry* trees. And let it be, when thou hearest the sound of a going in the tops of the *mulberry* trees, that then thou shalt bestir thyself." - 2 Sam. 5:23-24; 1047 B.C.

The black mulberry *(Morns nigra),* is supposed to be indigenous to Western Asia, and to have early become widely cultivated in various countries, not only for its fruit, but also for its leaves, used for the purpose of feeding silkworms: it belongs to the order *Moraceæ,* and has for its associates the fig and sycamore. In the New Testament it is called the sycamore tree (see Sycamore). It is a low-growing, thickheaded, stiff-branched, deciduous tree, seldom exceeding 30 feet in height, forming a stout trunk, and living to a great age. Its leaves are bluntly heart-shaped, somewhat lobed, stiff, and rough, and attached by a short firm foot-stalk. In summer it affords a dense shade.

On account of the nature of the leaves not being adapted to produce sound by the motion of the air, commentators have been led to doubt whether mulberry trees are alluded to in the above verse. Dr. Royle suggests that they were aspen trees (see Poplar).

This conclusion is not against the supposition that the mulberry was grown in Palestine: there is, however, no allusion to its being made use of for the production of silk; the first mention of that article being in Proverbs 31:22. "She maketh herself coverings of tapestry; her clothing is *silk* and purple." The word silk here is by some authors supposed to mean fine linen; but if silk was not made in Palestine in the time of Solomon, there is every reason to suppose that he obtained it by commerce from Persia, where it was early manufactured.

The next mention of silk is in Ezekiel 16:10,13; 420 years after Solomon: "I girded thee about with fine linen, and I covered thee with *silk (meshi)*… Thy raiment was of fine linen, and *silk."* There is some doubt whether the Hebrew word *meshi* really means silk; but there is every reason to suppose that Ezekiel would become acquainted with silk during his captivity in Babylon. Theophrastus and other ancient writers speak of silk, which appears to have been introduced from Persia into Greece, 325 B.C. In Revelations 18:12, we read that silk was one of the rich and valuable commodities of Babylon, but it is not otherwise mentioned in the New Testament. There is no evidence to show when the mulberry first began to be cultivated in Palestine for rearing silkworms, though silk is now the staple production of the country, especially on the slopes of Mount Lebanon, and in other parts of the North.

The white-fruited mulberry *(Moms alba),* a native of India and China, is a taller-growing tree than the preceding, which it has entirely superseded for the feeding of silk-worms.

Silkworms were first brought to Europe in the sixth century, but sericulture appears to have made but slow progress for a long time. In 1146 the breeding of silkworms and manufacture of silk were extensively carried on in Sicily, and spread into Italy, Spain, and the south of France about 1510. It is reported that the black mulberry was first introduced into this country in 1548. The rearing of silkworms was greatly encouraged by James 1 (1603); but although since then companies have often been established, they have not succeeded, chiefly because of our late springs and occasional cold summers.

The black mulberry, however, fruits abundantly in this country, and is appreciated as a luscious dessert fruit. The juice of mulberries being red, like blood, was used to excite the elephants of Antiochus to battle, as stated in 1 Maccabees 11:34.

Vine (Heb., Gephan)

"And Noah began to be an husbandman, and he planted a vineyard: and he drank of the wine, and was drunken." - Genesis 9:20-21; 2347 B.C. "In my dream, behold, a *vine* was before me; and in the *vine* were three branches: and it was as though it budded, and her blossoms shot forth; and the clusters thereof brought forth ripe grapes." - Genesis 11:9-10; 1718 B.C. "And they came unto the brook of Eshcol, and cut down from thence a branch with one cluster of grapes, and they bare it between two upon a staff." - Num. 13:23; 1490 B.C.

The vine, *Vitis vinifera,* is a slender-growing shrub or small tree, producing long slender branches, which are furnished with tendrils by which it is supported; it has cordate, lobed, alternate leaves, and bunches of small, inconspicuous flowers, which become berries and are called bunches of grapes. The juice of the grapes is fermented, and becomes wine, or the grapes are dried and are called raisins.

The vine is considered to be a native of the countries bordering the Caspian, and of Armenia, and is the first plant recorded in the Bible as being cultivated. It appears, from the dream of Pharaoh's butler, and from the paintings and sculptures on ancient Assyrian and Egyptian monuments, to have been early cultivated in. Egypt, Assyria, and Palestine; the latter country, the "Promised Land," being called "a good land, a land of… vines, and fig trees, and pomegranates."

The fact of the early cultivation of the vine in Palestine is supported by the numerous texts in the Bible in which the vine and its products, grapes and wine, are spoken of, and also by the numerous remains of wine presses cut out in the rocks.

The vine sometimes assumes the habit of a tree, the stems of one near Acre measuring 11 feet in diameter, the branches being trained on a trellis, and bearing bunches of grapes 10 to 12 pounds in weight, with berries of the size of small plums. In this country the vine is successfully cultivated under glass, and bunches have recently been produced in Scotland weighing 25 or 26 pounds. The weight of these bunches is sufficient to explain the necessity of the spies resorting to a staff, as stated in the above quotation.

The vine early spread westward, and is said to have been introduced into France 540 B.C.

It soon spread throughout the south of Europe, was introduced to England by the Romans, and is now extensively cultivated in America, Australia, South Africa, and other countries. Its successful cultivation, from a commercial point of view, is, however, restricted to a zone between 36° and 48° in both the Northern and Southern Hemisphere; the heat or cold beyond these limits being prejudicial to the perfecting of its fruits. In the southern parts of this country, in favorable seasons, the fruit ripens, and a wine of very inferior quality to that of the continent is made from it. The plums and currants of the shops come from the Ports of Spain and the Greek Islands; the currants are a small kind of grape extensively grown in the islands of Zante and Corinth, from the latter of which islands they obtained their shop-name "currants."

Wild Grapes (Heb., Boser)

"My wellbeloved hath a vineyard in a very fruitful hill: and he fenced it, and gathered out the stones thereof, and planted it with the choicest vine, and built a tower in the midst of it, and also made a wine-press therein: and he looked that it should bring forth grapes, and it brought forth *wild grapes.* - Isa. 5:1-2; 760 B.C.

In explanation of this, it may reasonably be supposed that the vines planted were truly the *Vitis vinifera,* but that they turned out to be an inferior variety, producing only small fruit, such as may be found on vines growing wild and not cultivated. The Rev. H. Tristram thinks they may have been the wild vine or fox grape, which has small, very acid, black fruit, and grows wild in hedges and other places in the Mediterranean regions, and which is no doubt the V. orientalis. This has compound leaves like the Virginian creeper, which some consider to be a species of Vitis.

Apples (Heb., Tappûach)

"A word fitly spoken is like *apples* of gold in pictures of silver." - Prov. 25:11; 700 B.C. "As the *apple* tree among the trees of the wood, so is my beloved among the sons. I sat down under his shadow with great delight, and his fruit was sweet to my taste." – Song of Sol. 2:3; 1014 B.C. "Comfort me with *apples*." - Song of Sol. 2:5. 1014 B.C. "I raised thee up under the *apple tree*." - Song of Sol. 8:5; 1014 B.C. "The smell of thy nose like *apples*." - Song of Sol. 7:8; 1014 B.C. "The vine is dried up, and the fig tree languisheth, the pomegranate tree, the palm tree also, and the *apple tree,* even all the trees of the field." - Joel 1:12; 800 B.C.

The apple tree, *Pyrus Malus,* belongs to the family *Pomaceæ,* which include the pear, quince, medlar, hawthorn and its allies. In its wild state the apple is a native of this

country, as also of many parts of Europe, but it is not recorded to have been known in Palestine in early times; it is, however, stated to be wild in some parts of Asia Minor, the Caucasus, and also in the Himalayas. Its fruit is small and acid, and is well known as the crab apple. As it is only within the last few hundred years that the fine sorts of both apples and pears we now possess have been obtained by skilful cultivation, they must have been unknown in the time of Solomon. It consequently becomes a question what was the *Tappûach,* of the Hebrews, translated apple tree and apples in our version of the Bible. On this point commentators differ much, some supposing the orange to have been the "apples of gold;" that fruit is, however, not known to have been cultivated in Palestine in the time of Solomon. Others suppose it to have been the citron, the delightful shade afforded by the tree, and the pleasant scent of the fruit, seeming to favor that view; but the acidity of the latter, even when ripe, does not agree with the words "sweet to my taste."

Seven hundred and twenty-six years after the date of the Song of Solomon, Theophrastus, the Greek naturalist, calls the citron Median and Persian apples, and they were highly valued on account of their aromatic scent, as antidotes against poison, and to make the breath sweet; this leads to the inference that the word *nose* in the text would be more correctly translated breath.

Others, again, consider the Hebrew word should have been translated quince, *Pyrus Cydonia,* a tree common in Palestine; the fruit is generally about the size of an apple, but more in the form of a pear, of a yellowish color when ripe, and highly fragrant, even to excess, thus sufficiently agreeing with the "apples of gold," but the quince is austere

and harsh, and therefore does not agree with the words "sweet to my taste;" this, however, is said not to be the case with some kinds, especially when cultivated in warm countries.

Another point for consideration, which seems to show that the *Tappûach* was not our apple tree, is that although good kinds of apples have in modern times been introduced into Palestine, they are said not to thrive in the South, though they are successfully cultivated in the north, especially on Lebanon. Canon Tristram says, there "are a few trees in the gardens of Jaffa, but they do not thrive, and have a wretched woody fruit;" this might be expected, on considering that bananas ripen at Sidon, two degrees further North than Joppa, thus showing that the climate in the neighborhood of Jerusalem would be too hot for the successful cultivation of the apple tree. This is, however, contrary to a statement given by Dr. Thomson, in the "Land and the Book," at page 545. He says that Askelon "is especially celebrated for its apples, which are the largest and best I have ever seen in this country." It is, however, generally believed that he was mistaken, and that what he saw were quinces and not apples.

Judging from what has been stated above, it will be seen that the apple tree known to Solomon and that spoken of two hundred years later by Joel could not be the apple tree of the present day.

The latest opinion as to the identity of the apple, and, perhaps, the correct one, is that of the Rev. H. B. Tristram, who says, "The *apricot* is most abundant in the Holy Land, and meets all the requirements of the context, and is the only tree that does so, but everywhere it is common, and perhaps, with the single exception of the fig, the most

abundant fruit of the country. In highlands and lowlands alike, by the shores of the Mediterranean, and on the banks of the Jordan, in the nooks of Judea, under the heights of Lebanon, in the recesses of Galilee, and in the glades of Gilead, the apricot flourishes and yields a crop of prodigious abundance. Many times have we pitched our tents in their shade. 'I sat down under his shadow with great delight, and his fruit was sweet to my taste.' The smell of thy nose (shall be) like apples. There can scarcely be a more deliciously perfumed fruit than the apricot, and its branches laden with its golden fruit may well be compared to apples of gold,' and its pale leaves to pictures of silver."

The word apple is a very general term for the smooth globular fruits of many plants, such as Adam's apple, *Citrus Limetta,* custard apple, *Anona,* love apple, *Lycopersicum esculentum,* Mammee apple, *Mammea americana,* and others.

Pomegranate (Heb., Rimmon)

"And beneath upon the hem of it thou shalt make *pomegranates* of blue, and of purple, and of scarlet, round about the hem thereof; and bells of gold between them round about." - Exod. 28:33; 1491 B.C. "And they brought of the *pomegranates,* and of the figs." - Num. 13:23; 1490 B.C. "And wherefore have ye made us to come up out of Egypt, to bring us in unto this evil place? It is no place of seed, or of figs, or of vines, or of *pomegranates;* neither is there any water to drink." - Num. 20:5; 1453 B.C. "A land of wheat, and barley, and vines, and fig trees, and *pomegranates*." - Deut. 8:8; 1451 B.C. "And be made the pillars, and two rows round about upon the one net-work, to cover the chapiters that were upon the top, with *pomegranates.*" 1 Kings 7:18; 1005 B.C. "I would cause thee

to drink of spiced wine of the juice of my *pomegranate*." - Song of Sol. 8:2; 1014 B.C.

The pomegranate in the above quotations is understood to be the fruit of the pomegranate tree *(Punicum Granatum),* a small bush-like tree, not exceeding 20 or 30 feet in height; it has oblong, lanceolate, entire leaves, about the size of tea-tree leaves, and showy red, yellow, or white bell-shaped flowers; the fruit is as large as a middle-sized apple, has a hard rind of a bright red or yellowish color when ripe, and is crowned with the permanent lobes of the calyx, which resembles a rosette, hence its importance as an ornament, as mentioned in the above quotations. Its flowers served as a pattern for the "golden bells."

The pomegranate tree is a native of Asia from northern India westward to Egypt, and of countries on both sides of the Mediterranean. It is common in Palestine, both wild and cultivated.

The pulp of the fruit is highly prized for making cooling drinks and sherbet, as in the time of Solomon; and the rind for tanning the red Morocco leather.

It was introduced into this country about 300 years ago; it is not quite hardy, but grows and flowers freely on south walls. In the severe frost of January, 1838, all old trees in the neighborhood of London were killed to the ground.

The genus *Punica* belongs to the family *Myrtaceæ,* but possesses some special points of difference which has led some botanists to consider it the type of a distinct family, termed *Granataceæ.*

Almonds (Heb., Shâked)

"Carry down the man a present, a little balm, and a little honey, spices, and myrrh, nuts, and *almonds*." - Gen. 43:11; 1707 B.C. "Three bowls made like unto *almonds,*

with a knop and a flower in one branch; and three bowls made like *almonds* in the other branch." - Ex. 25:33; 1491 B.C. "And the Lord spake unto Moses, saying, Speak unto the children of Israel, and take of every one of them a rod according to the house of their fathers, of all their princes according to the house of their fathers twelve rods; write thou every man's name upon his rod. And thou shalt write Aaron's name upon the rod of Levi: for one rod shall be for the head of the house of their fathers." - Num. 17:1-3; 1471 B.C. "And Moses spake unto the children of Israel, and every one of their princes gave him a rod apiece, for each prince one, according to their fathers' houses, even twelve rods: and the rod of Aaron was among their rods. And Moses laid up the rods before the Lord in the tabernacle of witness. And it came to pass, that on the morrow Moses went into the tabernacle of witness; and behold, the rod of Aaron for the house of Levi was budded, and brought forth buds, and bloomed blossoms, and yielded *almonds*." - Num. 17:6-8; 1471 B.C.

The almond, *Amygdalus communis,* is a small tree, belonging to the family *Drupaceæ,* its allies being the peach, nectarine, and apricot. Like them, it is supposed to be a native of Western Temperate India, or Persia, and in early times to have spread westward, and become common in Palestine at the time Jacob sent for corn into Egypt. His sending a present of almonds shows that it did not then grow in Egypt: it may readily be inferred, however, that it was introduced and had become common during the two hundred years residence of Jacob's descendants in that country; thus they had become acquainted with the form of its flower and fruit, and adopted them as models for ornamenting the bowls and knobs of the golden

candlestick. If such was not the case, it is difficult to explain how they became acquainted with the almond, as the tree did not grow in the Wilderness where they were encamped when the candlestick was ordered to be made. This equally applies to the twelve rods which (as one of them brought forth almonds), it is presumed, were all of the same kind, and cut from one or more almond trees. As this could not be done in the Wilderness, we are led to the supposition that the rods were brought with them from Egypt. With regard to this subject, Josephus says Moses "only desired the heads of the tribes to bring their rods with the names of their tribes inscribed upon them." He further says that on the rods being brought out of the tabernacle all were in the same state as when put in, except Aaron's, on which the people saw "buds and branches, with ripe fruits upon them: they were almonds, the rod having been cut out of that tree."

Dr. Kitto says "the rods or staves were doubtless official ensigns of the authority with which the heads of tribes were invested. Hence the Scripture frequently uses the word *rod* as equivalent to *scepter*. These staves were, of course, dry, and had probably been for years in use; and that such should 'blossom and bear fruit again' is a natural impossibility; it is, therefore, a greater miracle than if the rods had been freshly cut from a tree."

The Almond early spread throughout Southern and Middle Europe, and reached this country about 300 years ago. It is perfectly hardy, forming a small, spreading, branching tree, seldom exceeding 12 to 15 feet in height. It flowers early in spring, producing numerous pink blossoms before the leaves, and is very ornamental. Its fruit is like that of a peach, but of an oval form; and although it attains

the full size here, our summers are not sufficiently hot to mature it.

The greatest importation of almonds comes to this country from the Mediterranean ports of Spain, chiefly from Valencia; the best so-called Jordan almonds come from Malaga; and none now from the country of the Jordan.

Nuts

Two Hebrew names have been translated nuts, the Arabic equivalents of which are found to be the names of two distinct nut bearing trees, one being the Pistacio nut; the other, the walnut.

1. Pistacio Nut (Heb., Botnîm)

"Carry down the man a present, a little balm, and a little honey, spices, and myrrh, *nuts,* and almonds." - Gen. 43:11; 1707 B.C.

It is admitted by most commentators that the nuts of Jacob were the fruit of *Pistacia vera,* a small tree of the family *Terebinthaceæ,* having shining, winged, evergreen leaves; its fruit being a small, dry, egg-shaped drupe, the fleshy cotyledons of which, enclosed in a brittle shell, constitute the eatable nut. The tree is a native of Western Asia, and is wild in many rocky parts of Palestine. It is cultivated for the sake of its nuts about Damascus. It is also now common in Southern Europe, having been introduced about the commencement of the Christian Era.

The nuts constitute an article of commerce, and come to this country from ports in the Mediterannean, those of Aleppo being celebrated for their fine quality.

The tree is not hardy enough to bear the cold climate of this country, but specimens of it are to be seen in the conservatory at Kew.

2. Walnut (Heb., Agôz)

"I went down into the garden of *nuts* to see the fruits of the valley." - Song of Sol. 6:11; 1014 B.C.

The nuts of Solomon are generally admitted to be those of the walnut tree, *Juglans regia,* a large tree, with winged resinous leaves, belonging to the family *Juglandeæ.* It is found wild in many parts of Northern India, extending eastwards through the Himalayas to China, and to Western Asia through Persia; in early times it appears to have become naturalized (if not originally wild) in Lebanon and some parts of Gilead. Its cultivation seems to have been favored in Eastern countries for the sake of its nuts, even in the time of Solomon, and Josephus states that in his time old trees were abundant in Palestine, especially by the Lake of Genneserath. Solomon's nut garden is supposed to have formed part of his gardens at Etham, six miles from Jerusalem; although no vestige of these gardens remains, the locality is, however, still a garden. Dr. Boner says, "It is one of the sweetest valleys into which the eye can look, a well-watered orchard covered with every goodly fruit tree that Syria nourishes."

The walnut tree is now abundant in Middle and Southern Europe, and the nuts form an extensive article of trade, not only for food, but also for the oil they contain, which, when refined, is little inferior to olive oil. This oil is largely used in the manufacture of soap. Although a considerable quantity of walnuts are produced in this country, they, nevertheless, fall far short of the demand, large supplies being imported from France, Belgium, Holland, the two Sicilies, and other places.

It is recorded to have been introduced into England about three hundred years ago, and many trees probably of that age are now to be found.

Incense

The burning of sweet-smelling substances has formed an important part of the religious rites of millions of people of the principal nations of the earth, in the worship of idols from time immemorial, as is shown by sculpture and paintings on the monuments of ancient Assyria and Egypt. No doubt the Israelites became acquainted with the custom during their sojourn in Egypt, for, during the first year after their exodus, we read, "And thou shalt make an altar to burn incense upon: of shittim wood shalt thou make it." - Ex. 30:1. "And Aaron shall burn thereon sweet incense every morning: when he dresseth the lamps, he shall burn incense upon it." - Ex. 30:7. "And when Aaron lighteth the lamps at even, he shall burn incense upon it, a perpetual incense before the Lord throughout your generations." - Exod. 30:8. "And the Lord said unto Moses, Take unto thee sweet spices, stacte, and onycha, and galbanum; these sweet spices with pure frankincense." - Ex. 30:34; 1491 B.C. Thus, the burning of sweet-smelling substances under the name of incense, became a divinely established ritual, and rules were laid down for its observance, which on all occasions was to be an offering to God, who brought them out of the land of Egypt. In after times, however, these rules were sometimes departed from, the first occasion being in the time of king Ahaz, as we read that "they (the children of Israel) set them up images and groves in every high hill, and under every green tree: and there they burnt incense in all the high places, as did the heathen." - 2 Kings 17:10-11; 721 B.C. Also "And he put down the idolatrous priests,

whom the kings of Judah had ordained to burn incense in the high places in the cities of Judah, and in the places round about Jerusalem; them also that burned incense unto Baal, to the sun, and to the moon, and to the planets, and to all the host of heaven." - 2 Kings 23:5; 624 B.C. They thus fell back to the customs of the Assyrians and Egyptians in their worship of idols. Modern history teaches us that the burning of incense to idols was early practiced in China, India, and other nations of the East; and in the worship of the true God the custom has been adopted by the Greek, Roman Catholic, and other churches.

Besides the spices mentioned in the above verse, other kinds are used in other countries; and even aromatic woods, such as the *Agallochum* of India (see Aloes), and the sandal wood, *Santalum album,* in China; the joss sticks (candles) burnt by the Chinese in their temples being made of the sawdust of sandal wood, mixed with swine's dung. These, on being lighted, emit a fragrant smoke, and, on beholding it curling heavenward, the worshippers presume they have performed their religious duties by thus offering up incense to their deity. (For more particulars, see Frankincense).

Frankincense (Heb., Lebonah)

Much uncertainty prevails as to the tree or trees that produced the aromatic substance called frankincense, as also to the country from which it was obtained. It is first mentioned along with other odoriferous substances in the following verse: "Take unto thee sweet spices, stacte, and onycha, and galbanum; these sweet spices with pure frankincense. And thou shalt make it a perfume, a confection after the art of the apothecary." - Exod. 30:34-35; 1491 B.C. Considering that the Israelites had not been more than a year out of Egypt when the above was spoken, and that

they must have become acquainted with these substances while in that country, as no tree nor herb native of Egypt has been identified as capable of producing such aromatic substances as those above mentioned, we must conclude that they were obtained from other countries by trade. It was at first, and for long supposed, that frankincense was the produce of a species of Juniperus, *J. lycia,* or *J. Oxycedrus*, and that it came from Lebanon, hence the Hebrew word lebonah; if so, it could readily be conveyed by merchants of Tire to Egypt. It is generally understood that frankincense is a resinous matter, exuding from trees; but as little or no resinous matter exudes from any species of Juniper (their wood and branches, however, emit an aromatic odor when burnt), it is not at all improbable that the frankincense known to the Israelites at that time might be the wood of some coniferous tree, or even the resin of the fir (Pinus halepensis). That there was a tree known in Palestine as the frankincense tree seems evident from the following: "And as the flower of roses in the spring of the year, as lilies by the rivers of waters, and as the branches of the frankincense tree in the time of summer." - Eccl. 1:8 (Apocrypha). What tree this was cannot now be ascertained.

If some such substance was not the frankincense used by the Israelites shortly after they came out of Egypt, then we must presume that they were acquainted with the resinous substance now known as true frankincense, the produce of trees natives of Southern Arabia and the opposite coast of Africa, between 800 and 900 miles south of the land of Goshen. This, consequently, would have been obtained by trade, and was no doubt the frankincense used in later times in Palestine; as we read: "Who is this that cometh out of the wilderness like pillars of smoke, perfumed with myrrh

and *frankincense,* with all powders of the merchant?" - Song of Sol. 3:6; 1014 B.C. "Spikenard and saffron; calamus and cinnamon, with all trees of *frankincense*." - Song of Sol. 4:14; 1014 B.C. "All they from Sheba shall come: they shall bring gold and *incense*." - Isa. 40:6; 698 B.C.

There can be no doubt but that the frankincense here spoken of came from Arabia, and this view is confirmed by Theophrastus and other ancient writers, to whom frankincense appears to have been well known.

It was in more modern times supposed to be the produce of *Boswellia thurifera,* a tree of the myrrh family, *Amyridaceæ,* a native of Coromandel, and other parts of India. It yields an odoriferous gum resin called "Gogul," known in the Bombay bazaars as olibanum or frankincense. Within the last few years, however, true olibanum or frankincense has been discovered to be the produce of at least three species of *Boswellia*, full botanical descriptions of which (by Dr. G. Birdwood) appeared in the twenty-seventh volume of the Transactions of the Lineman Society, published in 1869. Dr. G. Birdwood ten years previously was superintendent of the Agri-Horticultural Society's gardens in Bombay, and, having procured specimens of the plants from Arabia and also from the Soumali coast of Africa, he was thus enabled to determine the true source of the, olibanum or frankincense of modern commerce. He has given a full account of this under the word *Perfumes* in the "Bible Educator" see Incense). The European frankincense, so called, is a gummy exudation of the common spruce fir, the American *Pinus Tædæ*, and the American Arbor Vita, Thuja *occidentalis*; indeed, all resin-producing coniferous trees may be called frankincense trees.

Balm (Heb., Tzori)

"And, behold, a company of Ishmeelites came from Gilead with their camels, bearing spicery and *balm* and myrrh." - Gen. 37:25; 1729 B.C. "Carry down the man a present, a little *balm."* - Gen. 43:11; 1707 B.C. "Is there no *balm* in Gilead; is there no physician there?" - Jer. 8:22; 600 B.C. "Go up into Gilead, and take *balm,* O virgin, the daughter of Egypt." - Jer. 46:11; 607 B.C. "Judah, and the land of Israel, they were thy merchants: they traded in thy market wheat of Minnith, and Pannag, and honey, and oil, and *balm*." - Ezek. 27:17; 588 B.C.

Although the word balm does not occur from its first mention in Genesis till the time of Jeremiah, a period of more than 1,000 years, there is but little doubt that the balm mentioned in the above verses was the produce of Palestine; it is, however, difficult to determine from what source it was obtained. It is considered by most botanists to have been the sap of the Lentisk tree, Pistacia Lentiscus, a small tree of the family Terebinthaceœ, not exceeding 15 or 20 feet in height, and about a foot in diameter, having winged smooth leaves of a pale color, and inconspicuous flowers. It is a native of Western Asia, and abounds throughout Palestine, especially in the rocky country of Gilead; it has been introduced and has become naturalized in the Greek Islands and on the coasts of the Mediterranean. It yields a balsamic sap, which is obtained by making incisions in the stems, from which the sap flows. This is known in commerce by the name of mastick; it forms a considerable article of trade, and is used as a varnish.

Another plant, Balanites Ægyptiaca, has also a claim to be viewed as the plant producing the balm of the Ishmeelites. It belongs to the family Simarubaceœ, and is a scrubby, spiny, uninviting-looking shrub, sometimes

attaining the size of a small tree; it has leaves about the size of those of the box tree, growing in pairs; and tufts of inconspicuous, small flowers; the fruit is about the size of that of the walnut tree, and when ripe is of a greyish color.

It abounds throughout Egypt and Northern Africa, also in Palestine, in the Plains of Jericho, and in the hot plain bordering the Dead Sea. It is truly a desert-loving plant, and has extended into India, where it is held in religious veneration by the Mohammedans.

By pounding and boiling the fruit an oil is obtained, of which a great quantity is prepared by the Arabs of the present day, and sold to pilgrims as "balm of Gilead" and "oil of Jericho;" it is considered to possess highly medicinal and healing properties. In several parts of Africa an intoxicating drink is made from the fruit by fermentation. (This is probably one of the balsam trees spoken of by Josephus under the name of myrobalanum, growing near Jericho.)

Balm of Mecca and Jericho

"Who is this that cometh out of the wilderness like pillars of smoke, perfumed with myrrh and frankincense, with all powders of the merchant?" - Song of Sol. 3:6; 1014 B.C.

Although balm is not mentioned in the above quotation, it appears that an aromatic gum resin, known as balm, or, as Josephus calls it, "balsam," was known in the time of Solomon, if not earlier, and was introduced from Arabia. Josephus, speaking of the presents brought by the Queen of Sheba to King Solomon, says, "They say also that we possess the root of that balsam which our country still bears, by this woman's gift." By this it appears that an aromatic balsam tree was introduced into Palestine, and

being highly prized by Solomon, came to be extensively cultivated about Jericho. It is, however, curious that no mention is made of these balsam trees from the time of Solomon to that of Josephus, a period of about 1,000 years, unless it be the balm spoken of by Ezekiel. It appears that the balm or balsam trees of Jericho were highly valued by the Roman conquerors, as branches of the trees were carried to Rome as trophies of victories over the Jews; and after their subjection by Titus Vespasian in A.D. 70, he placed an imperial guard to protect the plantations from being destroyed by the conquered Jews. In time these plantations were neglected, and no vestige of them remained at the time of the Crusades, Palestine having then come under the rule of the Turks.

Although it was well understood that Solomon's balsam tree came from Arabia, it was for a long time a matter of doubt what tree produced this highly valued balsam. Within the past few years it has been satisfactorily determined by Dr. G. Birdwood, who had the opportunity of becoming acquainted with the aromatic resins brought from India, Arabia, and Africa, to the bazaars and store houses of Bombay. One of these resins he considers to be the balm of the Bible, namely, the product of *Balsamodendron Gileadense* and of *B. opobalsamum,* which two plants furnish the commercial balm of Gilead of the present day.

They belong to the myrrh family, *Amyridaceæ,* which consists of trees and shrubs with winged leaves, all possessing a more or less aromatic principle. *B. Gileadense* is a tall, stiff-branched tree, native of Arabia, abounding in the mountains of Yeman, which are little less than 1,000 miles from Gilead; therefore it may be safely said that it could not have furnished the balm which the Israelites

were carrying from Gilead into Egypt, or that which Jacob sent into that country.

The balm is obtained by making incisions in the stem and branches of the trees, the rap exudes, soon hardens into small irregular nodules, and is then collected, and conveyed to Bombay, from whence it is shipped to Europe - under the name of "balm of Gilead," or, more correctly, "balm of Mecca." It must be considered unfortunate that the tree has been and still continues to be called *Balsamodendron Gileadense,* for, as above shown, it can have nothing to do with Gilead.

As a matter of course, the two balms above described have no relation whatever with the common pot-herb balm, *Melissa officinalis,* cultivated in our gardens, nor with the sweet smelling greenhouse plant known by the name of "balm of Gilead," *Dracocephallum canariense,* a native of the Canary Islands.

Myrrh, No. 1 (Hob., Lôt)

"A company of Ishmeelites came from Gilead with their camels, bearing spicery and balm and *myrrh (let)* going to carry it down to Egypt." - Gen. 37:25; 1729 B.C. "Carry down the man a present, a little balm, and a little honey, spices, and *myrrh (lôt),* nuts, and almonds." - Gen. 43:11; 1707 B.C.

In the Hebrew text of these two verses the word *lôt* has been wrongly translated myrrh, a very different substance from that which is considered to be true myrrh, *mor* (afterward mentioned). *Lôt* is by most authorities considered to be the Hebrew name of the gum we call *Ladanum,* which is an exudation from several species of rock rose, *Cistus,* the principal being *C. villosus, C. creticus,* and *C. salvifolius*. They are shrubby plants, with

simple, entire leaves, and white or pink single rose-like flowers, abounding in the rocky country of Gilead and other parts of Palestine. These, with the beautiful *Cistus ladaniferus,* well known in this country as "gum cistus," are also indigenous to the south of Europe and islands of the Mediterranean. It is principally from these species that the gum called Ladanum is obtained. It consists of a viscid exudation from the stems and leaves of the plant, and is collected during the heat of the day by drawing a bunch of leathern thongs or some woven material to which the gum adheres, over the bushes. It also adheres to the beards of goats, browsing amongst the bushes, and from the beards it is scraped off. This gum was once held in high medicinal repute, but is now chiefly used in perfumery. It may be considered to be the myrrh of the Ishmeelites and Jacob. The genus Cistus belongs to the family *Cistaceæ,* which consists of a considerable number of species, natives of the countries bordering the Mediterranean. It also contains the extensive genus *Helianthemum,* which is represented in Britain by the pretty small evergreen-leaved prostrate shrub, H. vulgare, and its numerous varieties, and by three much rarer species.

Myrrh, No. 2 (Heb., Môr)

"Take thou also unto thee principal spices, of pure *myrrh* five hundred shekels, and of sweet cinnamon half so much … and of sweet calamus two hundred and fifty shekels." - Ex. 30:23; 1491 B.C. "All thy garments smell of *myrrh,* and aloes, and cassia." - Psa. 45:8. "And when they had opened their treasures, they presented unto him gifts; gold, and frankincense, and *myrrh*" (Greek, *smyrna)* - Matt. 2:11. "Nicodemus … brought a mixture of *myrrh* and aloes, about an hundred pound weight." - John 19:39; 33 A.D.

Two Hebrew words have, in our version of the Bible, been translated myrrh, *lôt* and *môr;* the first occurs in Genesis 37:25, and Genesis 43:11, and is well ascertained to be the product of a different plant from that of the myrrh of the above verses (see Myrrh, No. 1). These verses show that the myrrh spoken of was held in high esteem as a perfume, and according to all writers, ancient and modern, there is every reason to believe that it was a gummy exudation obtained from certain trees, natives of the warmer parts of Arabia and opposite coast of Africa. No doubt it was obtained by the Israelites by commerce. It is now ascertained to be the produce of several species of *Balsamodendron,* belonging to the order *Amyridaceæ.* The species from which myrrh is now collected are *B. myrrha, B. kataf,* and *B. opobalsamum*; they are low, scrubby, thick, stiff-branched, three-leaved shrubs or small trees, growing in rocky places and on limestone hills, on the Soumali coast of Africa. The balsam exudes naturally from the stems and branches, but more abundantly from artificial incisions. It is a sticky white gum, which soon hardens, and is then collected in the same manner as the "balm of Gilead" (see Balm).

There appears to be another kind of myrrh, as we read in Song of Solomon 1:13: "A bundle of *myrrh* is my wellbeloved unto me." If the word *bundle* might be read *lump*, there would be no difficulty in believing that the word here mentioned referred to a gummy matter, as for example, the balsam just spoken of, which might be formed into a lump but not into a bundle. The word bundle leads to the inference that the stalks of some sweet-smelling herb are alluded to, such as that cultivated in gardens under the name of myrrh, *Myrrhis, odorata.*

Myrrh is again mentioned in a particular way: "And they gave him to drink wine mingled with *myrrh*" - Mark. 15:23. In Matthew it is said "vinegar mingled with gall." This leads us to suppose that the myrrh here spoken of was disagreeable to the taste, and of the nature of gall.

Linnæus has adopted *Myrrhis* and *Smyrnium* as the names of two genera of *Umbelliferæ,* of which two there are several species; they are perennial plants, possessing strong aromatic properties. *M. odorata,* garden myrrh, and *S. Olusatrum,* called Alexanders, being natives of Britain, and quite distinct from the true myrrh of Arabia, as above described.

Aloes (Heb., Ahâlim)

"All thy garments smell of myrrh, and *aloes,* and cassia." - Psa. 45:8. "I have perfumed my bed with myrrh, *aloes,* and cinnamon." - Prov. 7:17; 1000 B.C. "Myrrh and *aloes,* with all the chief spices." - Cor. 4:14; 1014 B.C. "And brought a mixture of myrrh and *aloes."* - John 19:39; 33 A.D.

The word *aloes,* as translated from the Hebrew, implies a lofty, fragrant tree, and as no tree of that nature has been identified as a native of Palestine, and as we find aloes always mentioned in connection with aromatic spices, several of which (such as cassia and cinnamon), are not produced in Palestine, it is therefore reasonable to suppose that aloes was procured from India by commerce through Arabia or the Red Sea.

It is now generally admitted to have been the wood of *Aquilaria Agallocha,* a lofty tree, at a height of one hundred or more feet, a native of Silhet and other parts of India, Cochin China, and the Malay Islands, where it is known by the names of Aquila, eagle-wood, and Aloes-wood. The

wood (particularly the darker part) is fragrant, especially when in a state of decay, and is then much valued.

Aquilaria belongs to a small family of plants called *Aquilariaceæ,* consisting of ten or a dozen species, all lofty trees, natives of the warmer parts of Asia.

Another lofty tree, *Aloexylon Agallochum,* known by the name of calambac, a native of Cochin China, is described as having fragrant wood, and is as much esteemed as the wood of *Aquilaria.* It belongs to the family *Leguminosæ.*

A tree more easily obtained by the people of Palestine would be the sandal wood, *Santalum album,* a native of the peninsula of India, and perhaps more generally used for its fragrant wood by all Oriental nations than the two preceding. It is very probable that it was the tree that furnished the sweet-smelling aloes of Solomon.

It is quite impossible to determine the tree spoken of in Numbers 24:6; 1452 B.C. "As gardens *by* the river's side, as the trees of *lign aloes* which the Lord hath planted.

It must be understood that the Linnæan genus Aloe of the present day, of which there is a considerable number of species, has no connection with the above. It consists of succulent leaved plants of the Lily family, all, with the exception of one, natives of South and East Africa, *A. vulgaris* being recorded as indigenous in the East Indies. Their inspissated juice forms the purgative drug known as aloes. The original and best comes from the island of Socotra, lying on the East coast of Africa, at the mouth of the Red Sea. This drug was known to the ancients, and was used by the Egyptians in embalming; it was probably the "aloes" brought by Nicodemus to embalm Christ. Its smell, however, is not a very agreeable one, and the taste is very bitter. It is now principally used as a horse medicine.

Cassia (1) (Heb., Kiddah)

"Take thou also unto thee principal spices, of pure myrrh five hundred shekels, and of sweet cinnamon half so much, even two hundred and fifty shekels, and of sweet calamus two hundred and fifty shekels, and of *cassia* five hundred shekels." - Ex. 30:23-24; 1491 B.C.

As the plants producing these spices are not natives of either Egypt or Syria, but of India and Ceylon, it is evident that Moses must have obtained them by commerce. There is every reason to believe that cassia came from Ceylon, where it is still cultivated for the sake of its aromatic bark. Botanically it is known by the name of *Laurus cassia,*[5] and is a small tree belonging to the family of *Lauraceæ.* It is closely allied to the Cinnamon tree *L. cinnamomum.*[6]

The leaves of both are alternate on the branches, 5 to 6 inches in length and 2 inches in breadth, smooth, with well-marked longitudinal veins, those of *L. cassia* being round, obtuse, while those of *L. cinnamomum* terminate in an acute point. The bark is obtained by making longitudinal incisions, in the branches, when it peels off, and in drying rolls up in the form of a pipe, varying in size according to the size of the branch, and in quality according to the thickness or thinness of the bark. Thus prepared this forms the Cassia and Cinnamon of commerce, which are also now procured from other Indian islands besides Ceylon.

Cassia bark is, however, always considered inferior to that of true cinnamon. Both species are cultivated in the hothouses at Kew, and are represented in the open air by the sweet bay tree, *L. nobilis,* and the sassafras tree, *L.*

5 Now called Cinnamomum cassia.

6 Now called Cinnamomum zeylanicum.

Sassafras, a tall tree 40 to 50 feet high, with aromatic bark, a native of North America.

Cassia (2) (Heb., Ketzioth)

"All thy garments smell of myrrh, and aloes and *cassia*." - Psa. 45:8.

It is difficult to say that the word *ketzioth* is another Hebrew word for the cassia above described, or that it is not correctly translated, and means some other plant; it is, however, generally believed to be the latter, though ancient Greek writers differ much as to what the plant is. Some suppose it to be *iris florentina,* well known as sweet-smelling orris root, a native of the south of Europe, while later writers consider it to be, the sweet smelling costus of the ancient Greek writers, known as Indian orris, which has in modern times been ascertained to be the root of *Aplotaxis Lappa* (*Aucklandia Costus* of some authors), a composite plant, native of Cashmere and parts of the Himalayas. It is a strong-rooted perennial plant, having large, slashed, radiate leaves, from which rises a thistle-like stem 5 to 6 feet high, bearing heads of thistle-like flowers of a purple color; the root is yearly collected, and forms a considerable article of trade, being conveyed through the Punjaub to Bombay, where it finds a market, and whence it is shipped to ports in the Persian Gulf, the Red Sea, and eastward to China. It is used medicinally, but its principal use is as a perfume, and in China as incense in temples. It is quite possible that it was known to Solomon. Linnæus applied the name Cassia to a genus of leguminous plants, which includes the plant yielding the purgative medicine called senna. None of these have any relation to the above.

Stacte (Heb., Nataf)

"And the Lord said unto Moses, Take unto thee sweet spices, *stacte,* and onycha, and galbanum." - Exod. 30:34; 1491 B.C.

The word *stacte* is the Greek for a drop, or exudation, and is equivalent to the Hebrew word *natal,* Stacte is an aromatic gum resin, supposed to have been derived from the Storax tree, *Styrax officinale,* which belongs to the natural family *Styraceæ,* consisting of a few trees and shrubs, natives within or near the tropics.

It is represented in the gardens of this country by the beautiful snowdrop tree, *Halesia tetraptera,* a native of Carolina. *S. officinale* abounds in Palestine; it is a small tree, or irregular, stiff-branched shrub, having oval leaves, whitish on the under side; its flowers are white, resembling orange flowers in appearance and scent. The gum is obtained by incisions made in the stems and branches, and is highly valued as a perfume.

Storax is mentioned in the Apocrypha, Eccles. 24:15 - "I gave a sweet smell like cinnamon and aspalathus, and I yielded a pleasant odor like the best myrrh, as galbanum and onyx, and sweet *storax,* and as the fume of frankincense in the tabernacle."

Both Dioscorides and Theophrastus speak of a mixture prepared from the odoriferous gums of the myrrh and storax trees, but what their myrrh and storax trees were is not now known.

According to Hanbury, the resin obtained from *Styrax officinale* in ancient times has entirely disappeared from modern commerce, the resin now known as liquid storax being the product of *Liquidamber orientale,* a tree, native of the southwest of Asia Minor.

Aspalathus "I gave a sweet smell like cinnamon and aspalathus." - Eccl. 24:15.

This word only occurs in the above verse, and is apparently the Greek name of some sweet-scented plant; what that plant was we have now no means of ascertaining. Theophrastus mentions it with cinnamon and cassia, thus indicating its Indian origin; he says it is sweet-scented. Dioscorides says that aspalathus is used for thickening ointment. Pliny says it grows in Cyprus, that it is a white, thorny shrub, the size of a moderate tree; he also speaks of it as growing in Spain, and being employed there as an ingredient in perfumes and ointments. Gerard speaks of aspalathus, and calls it *Lignum Rhodium.* This is by modern botanists considered to be the wood of *Convolvulus Scoparius* and *C. floridus,* two small, erect, branching, shrubby species, with small silky leaves and white and pink flowers.

Their wood is sweet-scented, and yields an oil called oil of Rhodium. Both are natives of the Canary Islands. It is probable that some allied species, native of the south of Europe, and possessing the same qualities, may be accepted as the aspalathus of Pliny and Gerard; while the Indian aspalathus of Theophrastus is considered to be *Myrica sapida, a* shrub or small tree, native of Nepaul, and allied to the sweet gale, *Myrica Gale,* common in boggy land in this country, and known as "bog myrtle."

Linnaeus has adopted *Aspalathus* as the name of a genus which includes a considerable number of species of small pretty shrubs, natives of South Africa, having small silky or heath-like leaves, and belonging to the family *Leguminosæ.* These, however, have nothing to do with the aspalathus of the ancients.

Spicery (Heb., Nechôth)

"Ishmaelites came from Gilead with their camels bearing *spicery* and balm and myrrh, going to carry it down to Egypt." - Gen. 37:25; 1729 B.C. "Carry down the man a present, a little balm, and a little honey, *spices,* and myrrh, nuts, and almonds." - Gen. 43:11; 1707 B.C.

When we consider that spicery is spoken of along with balm and myrrh, nuts and almonds, we may readily infer that it was not a general term, as understood by us, but probably the produce of some special plant. What that plant was, however, cannot now be determined. Some commentators consider it to be the Storax, *Styrax officinale* (see Stacte); others, one of the plants producing the gum tragacanth, *Astragalus Tragacantha.* This latter view is founded on the Hebrew word for spicery, being similar to the Arabic word for the gum tragacanth, which plant is a stiff, close-branched, spiny shrub, having small winged leaves. The gum exudes either spontaneously or from punctures made in the stems, upon which it dries in flakes or masses, and is afterward collected. Gum tragacanth, which is now known to be produced by several species of Astragalus, is used for many purposes in the arts, especially as a glue, and for stiffening woven fabrics. It is common in the desert, as well as on the high elevations of Lebanon, and in many other parts of Palestine. It belongs to the pea family, Leguminoscæ.

In Song of Solomon 5:1, we read, "I have gathered ray myrrh with my *spice."* And in verse 13, "His cheeks are as a bed of *spices."* Again, in 6:2, "My beloved is gone down into his garden, to the beds of *spices."*

The words *beds of spices*, lead us to suppose that Solomon had in his gardens at Etham all kinds of sweet-smelling plants common to Palestine, as also those natives of South

Europe, such as lavender, rosemary, sage, thyme, savory, marjoram, and more.

Olive Tree (Heb., Zait)

"And the dove came in to him in the evening; and, lo, in her mouth was an *olive leaf* plucked off." - Gen. 8:11; 2349 B.C. "In like manner thou shalt deal with thy vineyard, and with thy *oliveyard."* - Exod. 23:11; 1491 B.C. "And thou shalt command the children of Israel, that they bring thee pure oil olive beaten for the light, to cause the lamp to burn always." - Ex. 27:20; 1491 B.C."A land of oil olive, and honey." - Deut. 8:8; 1451 B.C."And Solomon gave Hiram twenty thousand measures of wheat for food to his household, and twenty measures of pure *oil*." - 1 Kings 5:11; 1014 B.C."And within the oracle he made two cherubims of olive tree (etz shamen), each ten cubits high. And five cubits was the one wing of the cherub, and five cubits the other wing of the cherub: from the uttermost part of the one wing unto the uttermost part of the other were ten cubits … And for the entering of the oracle he made doors of olive tree." - 1 Kings 6:23-24,31; 1005 B.C. "And over the olive trees and the sycamore trees that were in the low plains was Baalhanan the Gederite: and over the cellars of oil was Joash." - 1 Chron. 27:28; 1015 B.C. "Go forth unto the mount, and fetch olive branches and pine branches." - Neh. 8:15; 445 B.C.

On considering that Noah knew the leaf brought to him by the dove to be the leaf of the olive tree, we are led to suppose that it must have been a tree of economical importance to man before the flood. It is not, however, again spoken of till the time of Moses, as above quoted. As olive oil is then for the first time mentioned, it may reasonably be supposed that it was in use in Palestine at

an earlier date, and that it was the oil of the olive tree that Jacob poured upon the pillar. Its value as an article of commerce is shown by Solomon's paying Hiram's servants with oil, for timber to build the temple; and the numerous times olive oil and olive trees are mentioned in the Bible, prove it to have been of as much importance in early times as it continues to be at the present day.

The olive tree, *Olea europœa,* belongs to the family *Oleaceœ,* and is allied to the ash and privet. Although it has received the specific name of *europœa,* it is doubtful whether it is a native of Europe: most probably it was in early times introduced to Southern Europe from Western Asia.

It is a stiff, branching, evergreen tree, from ten to twenty or more feet in height, somewhat spiny, having smooth or slightly hoary stiff leaves, about the size and shape of privet leaves, producing in their axils tufts of numerous small white flowers, followed by an oblong berry-like fruit, consisting of a fleshy, oily rind, of a violet blue color when ripe, and enclosing a hard nut.

The olive abounds in Palestine, and in many places is the only tree to be seen. The Rev. H. B. Tristram says, "The most extensive olive yards are on the borders of the Phoenician plain. But they are scarcely less important in the country of Ephraim, and all the valleys from the Plain of Esdraelon to Benjamin, the patrimony of Manasseh and Ephraim, are clad with olives to this day. The vale of Shechem is one noble olive grove. The plain of Moreh is studded with them. They form the riches of Bethlehem, and cover the lower slopes of the valleys round Hebron. The plains of Gilead, and all the lower slopes, as well as the more fertile portions of Bashan, form a long series of

olive groves, neglected indeed, but still ready to yield their fatness in return for the most trifling culture; and they are the wealth of the regions of Philistea and Sharon."

The olive attains a great age; several trees on the Mount of Olives are supposed to have been there in the time of Christ. Like many other things the olive trees suffered greatly at the taking of Jerusalem by Titus Vespasian, and many were cut down. Dr. Bonar, speaking of the olives in the Garden of Gethsemane says "the olive is not killed by being cut down; it shoots up several stems in the place of one. There is hardly one of these olives that has a *single* trunk: three, four, or five stems come up out of each root." The tree, however, does not reach the size to be called a large timber tree, its trunk being short, and often contorted. As the cherubim of Solomon's temple were eighteen feet high, and the spread of each wing was nine feet, if olive wood were the material of which they were made, many pieces must necessarily have been joined together. If olive wood were not used, we can form no opinion as to what tree furnished the wood; but in consequence of the Hebrew word *êtz* shamen, in Kings 6:31, above quoted, being in Isaiah rendered oil tree, which is considered by some to be the oleaster, *Elœagnus angustifolius,* it is supposed that that was the tree of which the cherubim were made. The oleaster is, however, but a tree of small size (see Oil Tree).

Olive oil is obtained by expression from the pulp of the fruit, and is of great economical importance, not only in Palestine, but also in southern Europe. It is extensively used in the preparation of food, and may be called the milk of these countries. It is also used for burning in lamps, and in Joppa and other parts for soap making. The oil and also

preserved olive fruits are imported to this country from ports on the Mediterranean.

The olive tree is not sufficiently hardy to flourish in the open air in this country, except in sheltered situations on the south coast, where it is occasionally to be seen in the form of a bush. When planted against a south wall it attains a considerable size.

Oil Tree (Heb., Êtz Shamen)

I will plant in the wilderness the cedar, the shittah tree, and the myrtle, and the *oil tree.* - Isa. 41:19; 712 B.C.

The Hebrew word translated *oil tree* in the above verse is in 1 Kings. 4:23. translated "olive tree," and in Neh. 8:15, "pine branches." In the latter place both pine branches and olive are mentioned, thus showing that "pine branches" referred to some tree distinct from the "olive." The oil tree mentioned in Isaiah is considered to be the oleaster, *Elœagnus angustifolius,* which belongs to a small family of plants termed *Elœagnaceœ,* and is a small, hard-wooded, stiff-branched tree, averaging 15 to 20 feet high, having hoary, willow-like leaves, and clusters of small yellow flowers, which perfume the air for a considerable distance. The fruit is a berry about the size of an olive, and of a greenish color: it is dried by the Arabs and made into a kind of bread. An oil also is obtained from it. This tree is common in the south of Europe and Western Asia, and is abundant in Palestine.

At the present day the berries are known as "Trebizond dates."

On account of the Hebrew word for oil tree being also translated pine branches, some commentators have been led to believe that the oil tree was the pine, and that the oil

was the tar and turpentine obtained from the branches of pine trees.

There, however, appears to be much uncertainty regarding the identification of the tree or trees mentioned in the above verses, and translated from the Hebrew *êtz shamen.* This seems to have arisen from the Arabic word *zukkum* having been given to the oleaster tree by some commentators. Dr. Hooker shows that zukkum is properly the Arabic name of *Balanites ægyptiaca,* also an oil tree (see Balm). He says it is a well-known abundant shrub or small tree in the Plain of Jordan. In Smith's Dictionary of the Bible it is adopted as the oil tree of Isaiah. On the other hand, however, Canon Tristram, writing five years later, maintains that it was the oleaster above described, which he says is "abundant in every part of Palestine above the Jordan Valley, especially about Hebron, Tabor, and Samaria;" he also says "it cannot be the Balanites (*zukkum,* of the Arabs), because that tree does not exist except in the tropical region of the Jordan Valley."

Camphire (Heb., Côpher; Greek, Kupros)

"My beloved is unto me as a cluster of *camphire* in the vineyards of Engedi." - Song of Sol. 1:14. "Thy plants are an orchard of pomegranates, with pleasant fruits; *camphire,* with spikenard." - Song of Sol. 4:13; 1014 B.C.

The word camphire is considered to be derived from the Latin *caphura,* which comes from the Arabic káfúr, in turn supposed to come from the Sanscrit *karpura,* signifying white, and is presumed to be the origin of the name of the well-known medicinal drug called camphor. This is the produce of *Camphora officinarum,* a large tree of the Laurel family, native of China, Formosa, and Japan. It is, however, very questionable whether Chinese camphor was known in

Western Asia in the time of Solomon; be that as it may, it has nothing to do with the Hebrew *côpher,* the name of the plant bearing the cluster of camphire as our translation has it that grew in Solomon's vineyards at Engedi.

The Greek word *kupros,* rendered cypress in marginal Bibles, is considered to be the camphire of the text. This is now ascertained to be the plant called *Lawsonia alba,* a shrub attaining a height of 10 to 12 feet, the young branches being four-sided, with opposite, elliptical, lanceolate leaves, like those of the privet, and bearing panicles of small sweet-scented white flowers. When old it becomes a spiny bush, hence the mistake of Linnæus in making two species of the same plant in different stages, and calling the one *L. inermis* and the other *L. spinosa*. It belongs to the family *Lythraceæ,* which is represented in this country by that beautiful plant *Lythrum Salicaria,* the purple loose-stripe of our river banks, and the pretty flowering greenhouse shrub *Lagerströmia indica.*

Lawsonia is widely dispersed, being common in India, many parts of Western Asia, Egypt, and North Africa.

Its flowers are odoriferous, and its leaves are made into a paste, which has from remote ages been valued as a cosmetic, as is evidenced by Egyptian mummies. This paste is used to impart a yellow color to the finger and toe nails, the tips of the fingers, the palms of the hands, and the soles of the feet; this is considered by the fair sex among the Orientals to enhance their beauty. It is also used by the men for coloring their beards and for dyeing the manes and tails of their horses. As this custom was practiced in Egypt during the sojourn of the Israelites in that country they must have become well acquainted with it, but no mention is made of it in the Levitical law. It is

to be presumed that it was not esteemed or patronized by them, for in Deut. 21:12, we read, "Then thou shalt bring her home, to thine house; and she shall shave her head and pare her nails." This seems to imply that a captive woman belonging to a people who practiced the art of coloring their nails or hair might be taken for a wife after she had been deprived of her colored hair, and had had her nails pared and cleaned. In India the flowers are used by the Buddhists as offerings to their deities. In most countries where it is used it is known by the Persian name, "Henna." It is cultivated in Egypt, and bunches of its flowers are sold in the streets of Cairo, their scent being like that of roses.

Bushes, Shrubs

"And, behold, the bush (Seneh) burned with fire." - Ex. 3:2; 1491 B.C. "And she cast the child under one of the shrubs." - Gen. 21:15; 1892 B.C. "Who cut up mallows by the bushes." - Job 30:4; 1520 B.C. Among the bushes they brayed; under the nettles they were gathered together." - Job 30:7; 1520 B.C. "And they shall come, and shall rest all of them in the desolate valleys, and in the holes of the rocks, and upon all thorns, and upon all bushes." - Isa. 7:19; 742 B.C.

The word bush is a general term for all woody plants that do not assume the characters of trees.

They vary in height from less than 1 foot to 10 or 12; many are cultivated as ornamental plants, and known as shrubs, their places of growth being termed shrubberies. In their wild state they generally form thickets, some kinds occupying vast tracts of desert country, which are spoken of as bush and scrub, in this country familiarly represented by heath, broom, furze, bramble, hazel, juniper, sloe, and the like. These may be taken as a specimen of the bush of

Palestine, to which may be added Christ's Thorn, Balanites, Caper-bush, Tamarisk, and others.

With regard to the bush of Moses, no special plant can be named (see Shittim wood). Those who account for everything taking place naturally, suppose it to be *Dictamnus Fraxinella,* a well-known, strong-growing, showy, herbaceous perennial of the Rue family, native of Southern Europe and Western Asia. It grows to the height of from 2 to 3 feet, and has broad, unequal, winged leaves; the flowers are showy, being red or white, and produced in terminal spikes. The whole plant is covered with resinous oily glands, the oil being so volatile that the air surrounding the plant becomes impregnated with it to that degree, that the near approach of a light is said to be followed by a flash of flame. The writer has tried this experiment, but has never succeeded in seeing the flash; this may probably be accounted for by the moistness of our atmosphere. Several trees in different countries when in flower, and seen from some distance, have the appearance of being on fire, such as the flame trees, *Sterculia acerifolia* and *Nuytsia ligustrina,* in New South Wales; *Rhododendron arboreum*, in the Himalayas; and *Eugenia malaccensis,* the Malay apple.

In the neighborhood of the Dead Sea, the pretty-flowering tree, *Acacia Farnesiana,* is thickly covered with a parasite, a species of *Loranthus,* a member of the Miseltoe family; this, when in bloom, imparts to the whole tree the appearance of being on fire. There is, however, no record of this scarlet-flowered *Loranthus* growing on the *Acacia* trees in the desert of Midian.

Thorns (Heb., Chedek, Kôtz, Kimmeshonim)

"*Thorns* also and thistles shall it bring forth to thee." - Gen. 3:18; 4004 B.C. "Those which ye let remain of them

shall be pricks in your eyes, and *thorns* in your sides." - Numb. 33:55; 1452 B.C. "Then I will tear your flesh with the *thorns* of the wilderness, and with briers." - Judges 8:7; 1249 B.C. "Canst thou put an hook into his nose? or bore his jaw through with a *thorn?*" - Job 41:2; 1520 B.C. "The way of the slothful man is as an hedge of *thorns.*" - Prov. 15:19; 1000 B.C. "As *thorns* cut up shall they be burned in the fire." - Isa. 33:12; 713 B.C. "Behold, I will hedge up thy way with *thorns.*" - Hosea 2:6; 785 B.C. "And when they had plaited a crown of *thorns,* they put it upon his head." - Matt. 27:29; 33 A.D.

In our version the above three Hebrew words have been translated thorns, which word occurs thirty-two times in the Bible; a number of other Hebrew words have been translated prickly plants, and in many cases are spoken of as emblems of pain and trouble to man, but, like the thistle, they cannot be referred to any special plant. With few exceptions, thorns evidently is a name for spiny, hard-wooded shrubs, of which there are many kinds in Palestine, generally occupying desert tracts and rocky places.

In this country the word thorn is applied to the hard spines and prickles of such trees and shrubs as the bramble, rose, sloe, furze, and hawthorn (the latter being greatly used for forming hedges), all of which may be taken as examples of the thorns of Palestine.

Paliurus aculeatus, Zizyphus Spina-Christi, and Z. *vulgaris,* are strong hard-wooded shrubs, often climbing and holding on to other plants by strong hooked spines. *Zizyphus Spina-Christi* is called *nebk* by the Arabs, and sometimes assumes the character of a tree. Dr. Hooker mentions having seen one 40 feet high, with a spreading head. They are widely spread throughout the Mediterranean

region and Palestine. Z. *Spina-Christi* forms impenetrable hedges; and it is generally supposed that the "crown of thorns" was made of the flexible branches of one of these. The fruit of Z. *vulgaris* is succulent, about the size of a plum, and is well known as jujubes. They belong to the Buckthorn family, Rhamnaceœ, and are represented in this country by *Rhamnus catharticus,* the buckthorn, a rude-growing, spiny shrub.

Balanites ægyptiaca, already spoken of under Balm, is also well adapted for forming fences, and is used for this purpose in many parts of Egypt, especially as a hedge for the gardens in the oasis of Lybia.

Lycium europœum, a rambling, prickly shrub, well known in this country as boxthorn, or tea tree, and often used for covering garden seats, arbors, and the like, is also used as a hedge plant in Palestine.

Other plants, such as *Capparis spinosa,* the caper bush, several spiny species of *Astragalus,* which produce gum tragacanth, *Nitraria Schoberi, Ononis spinosa,* well known in this country as the rest harrow, and several species of *Acacia,* are all hard, spiny plants, growing abundantly in the desert. All, or any one of them, may be considered to be the "thorns of the wilderness."

Bramble (Heb., Atâb)

"Then said all the trees unto the *bramble,* Come thou, and reign over us." - Judg. 9:14; 1209 B.C. "And thorns shall come up in her palaces, nettles and *brambles* in the fortresses thereof." - Isa. 34:13; 713 B.C. "Nor of a bramble bush gather they grapes." - Luke 6:44; 31 A.D.

The Bramble, *Rubus fruticosus,* the well-known blackberry, is a decumbent shrub, producing long shoots with stiff, hooked spines, and rambling over hedges and

bushes, or forming thickets in open spaces. It belongs to the family *Rosaceæ.*

It is common throughout Europe and Western Asia, in Palestine being represented by *R. discolor,* which by some botanists is supposed to be only a variety of *R. fruticosus.* Being spoken of with thorns and nettles affords sufficient evidence to lead us to believe that the plant of the above verses is the same that we call bramble.

The Hebrew word for bramble *(atâb)* is also rendered thorn in Isaiah.

Some commentators consider the Christ's thorn, *Zizyphus vulgaris,* to be the bramble; others the box thorn, *Lycium afrum,* but there is no collateral evidence in proof of either of the three being the *atâb* of the Hebrews.

Brier (Heb., Shamîr)

"Then I will tear your flesh with the thorns of the wilderness and with *briers*." - Judges 8:7; 1249 B.C. "And there shall be no more a pricking brier unto the house of Israel." - Ezek. 28:24; 588 B.C.

The word brier occurs fifteen times in the Bible, and often in connection with thorns: the above quotations are sufficient to show that it is prickly plant; but there is no evidence to prove that it is restricted to any special one. In this country, bramble and wild roses are familiarly known as briars, some of which are also wild in Palestine, *Rosa rubiginosa* being the well-known eglantine or sweet briar. The expression in Ezekiel, "There shall be no more a pricking *brier* unto the house of Israel," is figurative, in allusion to rebellious men.

The Rev. H. B. Tristram supposes that the prickly shrub, well known in this country by the name of "butcher's

broom," may be a brier of the Bible; and others hold that nettles are included under brier.

Rose (Heb., Chadatzeleth)

"The desert shall rejoice, and blossom as the *rose*." - Isa. 35:1; 713 B.C.

The Hebrew word in the above verse of Isaiah is the same as that translated rose of Sharon; but having been written 300 years later, it is very questionable whether Isaiah's rose and the rose of the Apocrypha are referable to the same plant - the one considered to be the rose of Sharon. We think not, and it is quite probable that the different verses may refer to more than one plant. One or more may be true roses, which grow wild on Lebanon and in other parts of Palestine, in the same way as they do in this country, one being the common dog rose, *Rosa canina:* Dr. Hooker mentions having seen nine sorts cultivated. Other plants have also received the name of roses, such as the handsome species of *Cistus,* known as rock rose; *Hibiscus syriacus,* the Syrian rose; the beautiful rose bay, *Nerium Oleander,* and more, all of which may pass as the roses of the above verses.

Heath (Heb., Arar)

"For he shall be like the *heath* in the desert." - Jer. 17:6; 601 B.C. "Flee, save your lives, and be like the *heath* in the wilderness." - Jer. 47:6; 600 B.C.

The plants familiarly known as heath belong principally to the extensive genus *Erica,* of which nearly four hundred species are described in books and known by specimens in Herbaria, many of them being favorite garden plants. With a few exceptions all the Ericas are natives of South Africa, about a dozen only being found wild in Europe, five of which are common to Great Britain; they grow gregariously on uncultivated tracts commonly known

as moors and heaths. *Calluna vulgaris, Erica vulgaris* of Linnæus, is very abundant in Scotland, occupying hills and mountain slopes; it is well known by the name of "ling" and "heather."

Erica vagans and *E. orientalis* are the only species recorded as natives of Syria, the first growing on the coast plains (but not abundant), the second on Lebanon, therefore the heath of the above verses must refer to some other plant or plants. As the Arabic word for Juniper is exactly the same as the Hebrew word translated heath, and *Juniperus Sabina* is common through-out the desert plains and rocky places of Syria, it may be accepted as the heath of the desert and wilderness alluded to in the above verses. The common juniper, J. communis, is also a native of Syria, and, with the tamarisk, may also be considered to represent the heath of the desert.

Ivy (Greek, Kissos)

"And when the feast of Bacchus was kept, the Jews were compelled to go in procession to Bacchus carrying *ivy." - 2* Maccabees 6:7; 168 B.C.

The above verse from Bible times is in the Apocrypha. From it we learn that it was a plant dedicated to the god Bacchus, and that the Jews were compelled to carry it to his temple on feast days. There was nothing hurtful in carrying the plant, but it was abhorrent to them in consequence of their having to enter the temple of and pay homage to a heathen god. Ivy is now in common use for decorating our churches at Christmas, as is also the holly. The use of the latter originated with the early Romans, 673-640 B.C., who during the season of their festival called the Saturnalia (when all manner of games were performed) sent sprigs of holly with gifts to their friends, as an emblem of friendship.

The use of holly was adopted by early Christians, and at Christmas sprigs of holly are placed in churches, the first time this was done in this country being in the reign of Henry VI. It may be considered remarkable that two plants used in heathen idolatry should have come into favor in this country for ornamenting our churches at Christmas. The ivy, *Hedera Helix,* belongs to the family *Araliaceæ,* and is common throughout Middle and Southern Europe and Temperate Western Asia. The holly is a native of Europe but is not found in Palestine, which circumstance lessens its consequence as a holy plant.

Linnaeus has changed the Greek name of the ivy *Kissos* to *Cissus,* which he adopted as the name of an extensive genus of climbing plants belonging to the same family as the vine.

Judas Tree (Cercis Siliquastrum, Linn.)

The tree well known in this country, as also in Germany, France, Spain, and other parts of Europe, by the name of Judas tree, although not a Biblical plant, the name of Judas being connected with it is sufficient to make it worthy of being noticed in this book. It is a native of Palestine, as shown by specimens in the Kew Herbarium collected near Nazareth, on Mount Tabor, and at Samaria. It is common in Greece and other parts of the south of Europe, and is spoken of by Theophrastus under the name of *samuda.* It extends eastward to Japan, and is represented in North America by C. *canadensis.*

The Judas tree belongs to the papilionaceous section of Leguminosœ. It has a stout trunk and thick, stiff, somewhat horizontal branches, its leaves are simple, more or less heart-shaped, smooth and deciduous. The flowers are numerous, of a pale red color, closely produced on the bark

of the branches, old and young, and even from the trunk, and flowering before the leaves come out, impart to the tree a gay appearance. It is quite hardy in this country, and is recorded to have been introduced about three hundred years ago. It is noticed in Gerard's "Herbal" (1597) by the name of Judas tree, but why it received that name is not evident unless it is supposed that its stiff branches were well suited for Judas's purpose, but we do not read that he hanged himself on a tree. Matthew 27:5, simply says he went and hanged himself, therefore the origin of the name of Judas in connection with this curious tree may be considered as a myth.

Miscellaneous

Some doubtful as vegetable substances.

Hyssop (Heb., Êzôb)

"And ye shall take a bunch of *hyssop,* and dip it in the blood that is in the basin, and strike the lintel and the two side posts with the blood that is in the basin." - Ex. 12:22; 1491 B.C. "Then shall the priest command to take for him that is to be cleansed two birds alive and clean, and cedar wood, and scarlet, and *hyssop.*" "As for the living bird, he shall take it, and the cedar wood, and the scarlet, and the *hyssop,* and shall dip them and the living bird in the blood of the bird that was killed over the running water." - Lev. 14:4,6; 1490 B.C. "And a clean person shall take *hyssop,* and dip it in the water, and sprinkle it upon the tent." - Num. 19:18; 1471 B.C. "And he spake of trees, from the cedar tree that is in Lebanon even unto the *hyssop* that springeth

out of the wall." - 1 Kin. 4:33; 1014 B.C. "And they filled a spunge with vinegar, and put it upon *hyssop,* and put it to his mouth." - John. 19:29; 33 A.D. "He (Moses) took the blood of calves and of goats, with water, and scarlet wool, and *hyssop,* and sprinkled both the book, and all the people." - Heb. 9:19; 64 A.D.

Few words in the Bible have been a greater puzzle to commentators than the Hebrew word *êzôb;* all adopt it as the name of some plant. It was not till nearly five hundred years after the Passover had been instituted that we learn that the word *êzôb* was really the name of a plant; we then read that Solomon "spake of trees, from the cedar tree that is in Lebanon even unto the *hyssop* that springeth out of the wall" (hyssop being the Greek translation of *êzôb*).
But this does not help us to fix upon any special plant, there being many different kinds that spring out of and grow upon walls. It, however, may reasonably be supposed that Solomon's hyssop was a small plant.

In the time of Dioscorides, about 60 A.D., a plant was called *hyssop us,* but what that plant was or whether it was then considered to be the *êzôb* of the Hebrews is not now known. Celsius devotes forty-two pages of his book to this question, and mentions no less than eighteen plants, without arriving at any satisfactory conclusion as to which one is the *êzôb.*

By some modern botanists it is considered to have been some species of the mint family, but, with the exception of *Origanum ægyptiacum,* a kind of marjoram, all the plants they name are natives of Greece, not of Egypt.

On account of Linnæus having adopted the Greek word, *hyssopus,* as the name of a genus of labiate plants, one of the species being *H. officinalis*, the well known garden herb

called hyssop, the authoress of the "Scripture Herbal," and many readers of the Bible, have accepted it as the hyssop used by the Israelites; such, however, it cannot have been, as it is a native of the south of Europe and not of Egypt.

Other plants have been named; for instance, Dr. Boyle has endeavored to show that the *êzôb* is the caper bush, *Capparis spinosa,* a hard-wooded, spiny shrub, attaining a height of four or five feet, with small oval leaves about an inch in length, each having a large hooked spine below its attachment to the stem. Its general appearance may be compared to that of the blackthorn, *Prunus spinosa,* common in hedges and waste places in this country. The caper bush is a plant of the desert, and is common in the rocky parts of Palestine: it grows abundantly on old walls at Jerusalem.

The similarity of its Arabic name, *asaf* or *ezzof* to *êzôb* led Dr. Boyle to consider it the "hyssop that springeth out of the wall." Admitting this view to be correct, it must, however, be considered a very unfit and unlikely plant for the purpose ascribed to it at the Passover.

Although the Caper bush is a desert plant, it is, nevetheless, extensively cultivated in France and other parts of Southern Europe for its flower buds, which are collected before expansion, and form the well-known table condiment, "Capers." It is not sufficiently hardy to thrive in the open air in this country without protection in severe winters.

Another plant, considered by Dr. Kitto to be the *êzôb,* is *Phytolacca decandra,* a strong-growing, perennial herb, having a purplish branching stem, attaining the height of 6 to 12 feet, with alternate spinach-like leaves, 4 to 5 inches in length, and 1 to 1½ inches in breadth (often larger),

those towards the top of the stem producing from their arils erect, compact racemes of flowers, followed by pulpy berries, having a red juice. It is a native of the United States, and is called the "Virginian Poke-weed." It is either truly wild or has become naturalized in North Africa, India, China, New South Wales, Sandwich Islands, and others. In some of these localities it may, however, be a distinct but closely allied species to *P. decandra.* It is also recorded as a native of Syria, but we are not aware that it grows in the vicinity of Jerusalem. Be that as it may, we nevertheless think it as unlikely and unsuited as the caper-bush to be the *êzôb* used at the Passover.

Dr. Kitto founds his opinion of this plant being the hyssop of Scripture from having been told while traveling in Mexico, that a kind of Phytolacca was formerly used by the Indian females instead of soap; and he says, "In no instance has any plant been suggested that at the same time had a sufficient length of stem to answer the purpose of a wand or pole, and such detergent or cleansing properties as to render it a fit emblem for purification."

The instructions of Moses regarding the use of hyssop on the evening of the Passover, and in the ceremony of cleansing, do not bear out Dr. Kitto's opinion that the hyssop was of the nature of soap. His alluding to it as a wand or pole has reference to the hyssop mentioned by John, which was an article of some length: this, of course, must have been widely different from the bunch of hyssop ordered to be used at the Passover, or at the cleansing of the leper. In Matthew and Mark we read that the sponge was put, that is fixed, upon the top of a reed, thus showing that the sponge was to be used at a height beyond the reach of a man's arm. In John it is said that the sponge was put

upon hyssop, therefore the hyssop there spoken of must have been of a length sufficient to answer the purpose of the reed of Matthew and Mark.

In order to form some idea of what the hyssop of John was, it is reasonable to suppose that it was made of the same material, or of something of a similar nature, as the bunch of hyssop of Moses, which must have been some substance readily procurable and abundant; for, according to biblical students, it is calculated that two millions of Israelites, old and young, left Egypt on the morning after the Passover. Some writers allow ten, others twenty, as the number of a family in each house; taking the average number of fifteen, there would be above one hundred and thirty-three thousand Israelitish householders, each requiring a bunch of *êzôb;* and, therefore, if *êzôb* was a plant, it must have been very abundant throughout the whole land of Goshen in order that each householder could obtain a bunch on one and the same day, as ordered by Moses. It may be admitted to have been some culinary herb in daily use during its season (see Leek and Bitter Herbs), or, more probably, it may have been some common domestic article made of a fibrous substance, such as tow, or the wiry stem of some plant, or even straw, tied together so as to form a wisp or brush, such as is used in many places in this country at the present day for scrubbing.

The spikes of the heads of millet, *Sorghum vulgare,* when ripe, become hard and wiry, and are extensively used for making brushes and brooms in all countries where it is cultivated; they are largely imported to this country for that purpose, and fifty years ago were well known in the streets of London by the cry of "buy a broom."

As millet was cultivated in Egypt in early times, the spikelets may then have been used as a wisp or broom, and may have been the hyssop of Moses.

Admitting it to be such, assists to reconcile the hyssop of John with the reed of Matthew and Mark, and forces us to the conclusion that this was the dry stem of *Sorghum vulgare,* which is truly a reed, attaining a height of four, five, or more feet. This, with the spikelets on its apex, would be the hyssop of John on which the sponge was fixed.

The early Christians appear to have adopted some kind of plant as the Hebrew *êzôb,* as we learn from history that a bunch of hyssop was tied to a handle so as to form a little broom or brush, which was used in their ceremonies of purification, in imitation of those of the Jews. Even at the present day, in some Roman Catholic churches the brush used for sprinkling the holy water is called the hyssop.

Scarlet (Heb., Tola)

"And the priest shall take cedar wood, and hyssop, and *scarlet,* and cast it into the midst of the burning of the heifer." - Num. 19:6; 1471 B.C. In Lev. 14:6,51-52; 1490 D.C. it is mentioned as the scarlet.

The word scarlet is a well-known name for a deep red color given to cloth, paintings, and so forth, by a red dye, obtained chiefly from several kinds of plants, or from an insect that lives on plants. In the above quotation, it can be read only as meaning color, and we must presume it was some colored substance, as it was to be burnt with the hyssop and cedar wood. In Hebrews 9:19; 64 A.D., Paul says, Moses "took the blood of calves and of goats, with water, and scarlet wool, and hyssop, and sprinkled both the book and all the people." From this we learn that the scarlet which was to be burnt was wool dyed scarlet. Scarlet wool

is, however, not mentioned by Moses, nor is it alluded to during the period of one thousand five hundred years that intervened between the time of Moses and Paul.

Our reason for taking up the word scarlet, is for the purpose of explaining the source from which the scarlet dye is supposed to have been procured. This, we have every reason to believe, was an insect called kermes, which infests a species of oak, Quercus coccifera, common to the regions of the Mediterranean and Palestine. On this oak the insect breeds, covering the branches with flocky masses, similar to the blight common to apple trees in this country. At a certain period, the insect, which is like a bug, is collected; it is then used as a dye like cochineal, to which it is, however, inferior. Its use as a scarlet dye is recorded to have been known to the Phoenicians before the time of Moses.

Manna (Heb., Manhu)

In the Bible the word manna is first mentioned in Exo. 16:13-15; 1491 B.C. "In the morning the dew lay round about the host. And when the dew that lay was gone tip, behold, upon the face of the wilderness there lay a small round thing, as small as the hoar frost on the ground. And when the children of Israel saw it, they said one to another, It is manna: for they wist not what it was. And Moses said unto them, This is the bread which the Lord hath given you to eat." Again in Numbers 11:6-9, we read: "But now our soul is dried away; there is nothing at all, beside this *manna,* before our eyes. And the manna was as coriander seed, and the color thereof as the color of bdellium. And the people went about, and gathered it: and ground it in mills, or beat it in a mortar, and baked it in pans, and made cakes of it; and the taste of it was as the taste of fresh oil.

And when the dew fell upon the camp in the night, the manna fell upon it."

In another place we read that the manna was to be gathered fresh every day, an omer for each man; that none was to be kept till the morning, that which was kept breeding worms and stinking; also that no manna fell on the Sabbath day. The people were, however, to gather a double quantity on the sixth day for the Sabbath; this did not breed worms nor stink. Manna continued to "rain from heaven" regularly during the forty year sojourn of the Israelites in the wilderness, but ceased after they entered the land of Canaan.

On studying the nature and descriptions of manna as given in the above and other texts of the Bible, we find nothing to lead us to suppose that it was a plant, or the produce of a plant. If the question then be asked, "Why give it a place in this work?" we answer, "Because the name manna has, in modern times been given to the produce of certain plants which some travelers and writers consider to be the manna of the Israelites."

Plant manna is the concrete sap of the stems, or gummy exudations from the leaves, of certain plants. It is produced by two special plants, natives of the deserts of Sin and Sinai, the more important of the two being a species of tamarisk which Ehrenberg has named *Tamarix mannifera*. It is a small tree or much-branched shrub, in general habit resembling the pretty heath-like shrub, *T. gallica*, common on the sea shores of this country, France, and the region of the Mediterranean generally. *T. mannifera* is common in the desert of Sinai, and is the *tarfa* of the Bedouin Arabs. At certain seasons of the year, its stems are punctured by a small insect, a species of the Cynips family: from the

bark thus punctured, a honey-like liquid exudes, which is collected by the Bedouin Arabs of the present day: They preserve it like honey, or harden it and make it into cakes: and they look upon it as a great delicacy.

At a meeting of the Linnæan Society, in February, 1837, a paper was communicated by Lieutenant Welstead, who had traveled in Syria; and specimens of the tamarisk, with the manna exuding, were exhibited, as also samples of the concrete manna. He attributed the disappearance of the manna, after the Israelites crossed the Jordan, to the soil and climate not being favorable to the life and breeding of the puncturing insect; for, although the tamarisk bushes grew there, there was no manna.

The other manna plant of the desert is *Alhagi maurorum,* a low, scrubby, spiny bush, with small simple leaves, belonging to the Astragalus group of Leguminosœ. During the heat of the day a sweet gummy substance exudes from the leaves and stems; this hardens, and is collected by shaking the bushes. Being of a sweet, mucilaginous nature, it is called a manna; and Professor Don was so convinced that it was the manna of the Israelites, that he proposed to change the name of the plant to Manna *Hebraica.*

There is every reason to believe that the Israelites did not overlook these plant mannas; and, on considering the differences in the descriptions of the nature of the manna as given by Moses, it appears to us that part of the descriptions may belong to the plant manna, and part to the manna that fell every night. The quantity of plant manna obtainable would be quite insignificant when compared with the quantity required every day to feed between two and two and a half millions of Israelites calculated to be then living in tents in the wilderness. The allowance to

each man was an omer a day, which is equal to about two and a quarter English pints, each pint averaging about a pound of such substances as tapioca, sago, and more, to which an equal bulk of manna may be compared in weight. Therefore, allowing an omer to contain about two pounds, to speak in round numbers upwards of two thousand tons would have to be collected every day.

Manna is again mentioned six times in the Bible, all being to the effect that it was miraculously provided as bread for the Israelites while in the wilderness.

In the Apocrypha, in the Book of Baruch, chapter 1, verse 10, we read, "And they said, Behold, we have sent you money to buy burnt offerings, and incense, and prepare ye manna, and offer upon the altar of the Lord our God." This was long after the manna that fell in the wilderness ceased to be used by the Israelites as bread; and, as the manna here spoken of could evidently be purchased, no doubt seems to be left but that it was either the tamarisk or camel-thorn manna of the desert, which would be collected as an article of trade.

The manna of commerce of the present day is obtained by making incisions in the stems of the flowering ash, *Fraxinus Omits (Melia,* Greek, means sweet like honey) a much-branched tree, attaining the height of 30 or 40 feet; this tree is a native of Southern Europe and the Levant. The greatest quantity of manna comes to this country from Sicily and Calabria, and we have no account of its being collected in Syria.

The above is sufficient to show that the manna produced by the plants of the desert cannot be the manna which fell every night on the camp of the Israelites for a period of forty years. Such being the case, a class of travelers and

natural history writers have endeavored to prove that the small round thing that lay on the ground like coriander seed was a cryptogramic plant of the lichen family, first brought to notice by Pallas, a Russian traveler and botanist, in 1788. He observed it in the Crimea, and also on very dry limestone hills in the desert of Tartary, lying on the ground like small stones united together. The use made of it by the inhabitants for food in times of scarcity led him to name it Lichen *esculentus* (*Lecanora esculenta* of modern botanists), and he described and figured it in a Russian botanical work in 1796. The species now in question, and a closely allied species (*Lecanora affinis*), occupy vast tracts of barren plains and mountains in many regions of Western Asia, and also of North Africa; in time it loses its attachment to the surface on which it grows, and being light is carried up by the winds, and conveyed in the air to a great distance, ultimately falling to the ground, and sometimes forming a layer several inches in thickness. Sheep eat it, and in times of scarcity the inhabitants make a kind of bread of it, regarding it as sent to them by Providence, and believing that it falls from Heaven. About twenty years ago a shower of this lichen fell in Persia in a time of great scarcity, and was an opportune relief to the inhabitants. Specimens of this shower are to be seen in the Museum at Kew, sent by W. H. Loftus, Esq., in 1854; also specimens from Bayaza, in Asiatic Turkey, sent in 1855 by H. H. Calvert, Esq., British Consul at Erzeroum. On the 3rd of August, 1828, a shower is recorded to have fallen in the region of Mount Ararat, in Armenia.

The same, or a closely allied species of lichen, has been observed by the Rev. H. B. Tristram, in the great Desert of Sahara, lying on the ground like nodules of sand; it is

gathered by the natives, and used by them as food in times of scarcity.

The late Giles Munby, Esq., who resided a number of years in Algeria, also gives an account of it in a paper read before the British Association at Birmingham, in 1849. He says that L. *esculenta,* or an allied species, covers the sand of the desert; and that the French soldiers, during an expedition south of Constantine, subsisted on it for some days, cooking it in various ways, and making it into bread. He further states that it is blown about by the wind, and collects in heaps. Being of a soft, starchy nature, it can readily be imagined that it would soon ferment, and stink.

These accounts seem to leave no doubt that one or more species of crustaceous, eatable lichens grow on sterile plains and mountains, and are occasionally carried by the winds to distant localities; that the latter circumstance seems to be uncertain and erratic, and also that these lichens do not agree with the text, which says, "When the sun waxed hot, it (the manna) melted."

All this evidence gathered together, does not, however, explain the regularity of the manna falling in the wilderness every night (except the Sabbath) for forty years.

In the "Bible Educator" the very Rev. R. Payne Smith, D. D., Dean of Canterbury, says that it "was certainly miraculous in its first giving, and in many of the circumstances connected with its gathering and continuance, though it may, like the plagues of Egypt, have been, to some extent, based upon a natural phenomenon."

As crustaceous lichens do not spring up suddenly, it may be a question whether some of these reported falls are not due to the sudden growth of a gelatinous alga, such as star jelly, *Nostoc commune,* which grows on garden walks and

other surfaces during the night. It is recorded that in the Presidency of Bombay in 1855, an area of several square miles was covered with *Nostoc collinum;* the Scindians called it meat, and believed that it fell from Heaven. In China, *Nostoc edule* is dried and forms an ingredient in soup.

Bitter Water

"And when they came to Marah, they could not drink of the waters of Marah, for they were bitter." "And the Lord showed him (Moses) a tree, which when he had cast into the waters, the waters were made sweet." - Ex. 15:23,25; 1491 B.C.

It is difficult to form any opinion as to what the tree mentioned in the above verses was, as the event took place in the desert. The spot called Marah, or the bitter fountain of the Israelites, is well known, and has been visited by travelers, who have found the waters to be unpleasant, saltish, and somewhat bitter, as is common with waters in the desert. The Arabs consider it bitter, but when pinched, drink of it, as do also their camels. Inquiries were made of the Bedouin Arabs as to whether they used, or knew of any tree for sweetening the water, and the answer was invariably in the negative. The only trees seen in modern times near Marah are a few date palms, the fruits of which are sweet, and if bruised and put into water would no doubt sweeten it. A bushy shrub, called by the Arabs Ghurked, the *Nitraria Schoberi* of botanists; is abundant: it is a stiff, rigid, thorny shrub, with thick, fleshy leaves, the whole of a forbidding aspect. It is truly a plant of the desert, especially of saline plains. It has white flowers, and produces a small red fruit (not unlike the barberry), which is juicy and refreshing to travelers. Some have conjectured that the fruits of this bush were used by Moses, but, unfortunately

for this supposition, they could hardly be ripe at the time he sweetened the water. Another plant, *Peganum Harmala*, a perennial rutaceous herb, abundant in that part of the desert, has been named, but, not being a tree, it is more unlikely than the former.

Dove's Dung (Heb., Chiryónim)

"And there was a great famine in Samaria: and, behold, they besieged it, until an ass's head was sold for four score pieces of silver, and the-fourth part of a cab of *dove's dung* for five pieces of silver." - 2 Kings 6:25; 892 B.C.

Although so repugnant to our notions of what constitutes human food, some writers consider that the words of the above verse are to be taken literally, that dove's dung was really used for food, and that it was so scarce that the fourth part of a cab, about six ounces, and measuring a pint and a half, cost twelve shillings and sixpence of our money. Considering that doves-and pigeons, both wild and domesticated, are extremely numerous in some parts of Palestine, being bred as in this country about dwellings and in dove cots, it might not be difficult to obtain a certain quantity of dove's dung.

Josephus says, "And the Hebrews bought a sextary of dove's dung, instead of *salt,* for five pieces of silver." This leads to the inference that salt was scarce in Samaria during the siege; and that dove's dung contained a salt, and was used as a substitute. If this be correct, no further comment as to the use made of dove's dung is necessary, but subsequent commentators, with more reason, have considered the Hebrew word translated dove's dung to be the vulgar name of some common food plant, in the same way as in this country toad-stool is a vulgar name for eatable fungi, such as mushrooms and champignons,

which might easily by some writer be rendered toad's dung. Admitting the dove's dung so-called to be some vegetable substance, there is yet much difficulty in arriving at any satisfactory conclusion on the subject; we may, however, conclude that it was something kept in store, and sold as a common article of food, and that the store, as a result of the siege, had become nearly exhausted, which led to the high price at which it was sold.

Buckhart says that the Arabs give the name of dove's dung to a kind of moss that grows on trees and stones; this, no doubt, is some species of lichen, which cannot be accepted with any degree of certainty as the dove's dung of Samaria. It is supposed by some to have been pulse, such as beans, lentils, chick pea, or even parched corn; but if so, how is it that they were not spoken of by their proper names?

Another and more likely view is that it was the root of some bulbous plant, and *Ornithogalum umbellatum,* well known in English gardens as the "Star of Bethlehem," is considered by some to be the plant. It is found wild in some parts of this country, and produces an umbel of beautiful white flowers on a stalk six to eight inches high. It is abundant in Palestine, the hill sides in spring being white with its flowers. There is historic evidence that its bulbous roots were used as food in Syria. Dioscorides, writing about 60 A.D., says the roots were dried and reduced to meal, and mixed with flour to make bread. They are also recorded to have been used for food in early times in Italy.

In North America, the roots of its ally, *Camassia esculents,* are dried and stored, and thus form a considerable part of the winter food of the Indians. This leads us to presume that in Palestine the roots of *Ornithogalum* were collected,

dried, and regularly sold for food, and that during the siege they became scarce.

The generic name, *Ornithogalum,* given to it by Linnæus means literally "bird's milk."

Soap (Heb., Borith)

"For though thou wash thee with niter, and take thee much *sope,* yet thine iniquity is marked before me." - Jer. 2:22; 629 B.C. "Who shall stand when he appeareth? for he is like a refiner's fire, and like fuller's *sope*." - Mal. 3:2; 397 B.C.

The reason for *soap* being mentioned here is that alkaline salts used in its manufacture are obtained by burning certain kinds of plants, chiefly of the family *Chenopodiaceæ,* the principal being *Salsola Kali* and *Salicornia fruticosa.* They are common in the Northern Hemisphere, and are always confined to mud banks of tidal rivers, and the sea coasts; they abound on the Mediterranean coast of Palestine, as also on the shores of the Dead Sea.

Salsola Kali is a brittle, succulent, branched plant, of a bluish-green hue, forming a bush a foot to a foot and a half high, having numerous small awl-shaped spiny leaves; it is common in this country, and is known by the name of salt wort.

Salicornia herbacea is a succulent, jointed-stemmed plant; it grows in the same situations as the former, attains the height of six or more inches, and is known by the name of glass wort. *S. fruticosa* is an erect, *twiggy,* branching shrub, 2 to 3 feet high, having small semi-cylindrical leaves, not more than an inch in length; it is rare in this country, but abundant on all the coasts of the Mediterranean. The flowers of all these species are small and inconspicuous. *Mesembryanthemum nodiflorum*, *Saponaria officinalis,* and

some species of *Chenopodium,* are also burned for the same purpose.

The making of soap with the ashes of these plants, and with olive oil, instead of animal fat, was extensively carried on along the Mediterranean coast of Palestine in early times, as it is at the present day. Soap forms a considerable article of trade from Joppa and other ports.

Kali or *El kali* is the Arabic word for the *Salsola,* hence our familiar word *Alkali.*

Pannag (Heb., Pannag)

"Judah, and the land of Israel, they were thy merchants: they traded in thy market wheat of Minnith, and *Pannag,* and honey, and oil, and balm." - Ezek, 27:17; 588 B.C.

In the English version of the Bible the word pannag has not been translated; it is supposed by some to be the production of some vegetable-indigenous to Syria, while others think that it is the grain called millet, *Panicum miliaceum,* which is extensively used in many countries for making bread. *Panis,* being the Latin for bread seems to afford some explanation of the word pannag. Probably the word includes many kinds of small wares carried in baskets or panniers on animals' backs; this custom obtains in many countries at the present day, pannag being the common name of the articles so carried.

Another meaning may be obtained from the similarity of the word pannag to the Greek *panaxeia,* which means an universal medicine or *panacea,* considered by the ancient Greek physicians as a cure for a great variety of diseases. Hence comes our English word panacea. From what plant the ancients obtained their panaxeia is not now known. It is supposed by some to have been the famous ginseng of China, which is held in high estimation by the Chinese,

and is said to ward off all complaints, and to make old people young; it is, however, very doubtful whether in the time of Ezekiel the trade of Greece and Palestine extended so far east as China.

Linnaeus adopted the Greek word panaxeia (reduced to *Panax)* as the name of a genus of plants of the family *Araliacecæ*. It consists of small trees, shrubs, and perennial herbs, none of which are natives of Syria, Egypt, or the regions of the Mediterranean. The type of the genus is *Panax quinquefolia,* a perennial herb, native of North America, which was supposed to be the ginseng of China, *P. Schinseng.* On account of the latter becoming scarce in China, P. quinquefolia has been substituted for it, large quantities having been shipped from New York to China; this, however, could not be the panaxeia of the ancients, as the Continent of America was not then known.

Amber (Heb., Chashmal)

The word *amber* occurs three times in Ezekiel 1:4; 1:27; 8:2. In each of these places it is spoken of with regard to its color only. Some commentators consider it to be a shining metal similar to brass, which view is probably correct, as it is very questionable whether the substance we call amber was known in Palestine in the time of Ezekiel. Amber has, in modern times, been ascertained to be the resinous sap naturally exuded from certain kinds of trees in lumps of various sizes, it becomes hardened and resists decay, and its being found where no trees now exist, led to the belief that it was a fossil substance; the kind that is found in the north of Europe is supposed to be the produce of some coniferous tree. A kind called gum copal is found in abundance in a fossil as also in a recent state in East and West Africa, and is the produce of trees of the family *Leguminosæ.*

Bdellium (Heb., Bedólach)

"And the gold of that land is good: there is *bdellium* and the onyx stone." - Gen. 2:12; 4004 B.C.

It is quite impossible to determine what the substance was called bdellium in the above verse, but as it is mentioned with gold and the onyx stone, some suppose it to be a mineral substance, others pearl or musk.

Two thousand years afterward, the word again occurs in Numbers 11:7, where it is said, "And the manna was as coriander seed, and the color thereof was as the color of *bdellium."* This clearly shows that the Israelites were acquainted with the substance called bdellium, and as, at the time it was spoken, they had not been long out of Egypt, it shows that they had obtained a knowledge of it in Egypt. By some it is supposed to have been an aromatic gum resin, the product of trees natives of South Arabia and the opposite coast of Africa. This, no doubt, would be an article of trade with the Egyptians.

At the present day the resin obtained from *Balsamodendron africanum* is called "African bdellium," and that from *B. Roxburghii* "Indian bdellium:" they come to this country by way of Bombay (see Balm and Myrrh).

Onycha (Heb., Shecheteth)

"Take unto thee sweet spices, stacte, and *onycha,* and galbanum."Ex. 30:34; 1491 B.C.

Commentators differ in opinion as to the substance called onycha: some consider it to be the horny operculum or shield of some shellfish of the Strombus tribe; it was formerly employed in medicine under the name of *Blatta byzantina;* nevertheless it is very doubtful whether it is the kind of onycha spoken of in the above quotation; for being mentioned with sweet spices, stacte, and galbanum

leads to the inference that it was the produce of a plant; but we have no data to lead us to judge what that plant was, except that it was sweet smelling. In the Arabic version of the Bible the word *ladana* stands for the *onycha* of our version, thus implying that it was the gum resin ladanum (see Myrrh). Onycha is also mentioned in the Apocrypha, where in Ecclesiastes 24:15, we read, "A pleasant odor like the best myrrh, as galbanum, and onycha, and sweet storax:" by being mentioned with sweet smelling storax, has led some Bible commentators to consider it to he the produce of an allied species, namely, S*tyrax benzoin,* which yields the well gum resin "benzoin." This is a small tree or shrub native of Sumatra, therefore very unlikely to be the source of the onycha of the Bible. It is, however, probable that there might have been two kinds of onycha, one the produce of a plant, the other of a mollusc. Of the kind from the latter, there seems to be no doubt, a quantity having been seen some years ago in the Bombay custom house by Dr. Birdwood, the writer on perfumes in the "Bible Educator;" it, however, seems to be rare, and he says it has no perceptible perfume. Onycha, or in Greek, *onux,* means a nail, or like the finger nail.