

New and Interesting Facts from Science and Life

Just How Manna Is Marketed



The Children of Israel Gathering Manna. The Illustration is a Reproduction from an Old Wood Cut.



The Manna Plant, Which Grows in the Sinaitic Desert. A Blossom is Shown at the Left.

"MIRACLE" FOOD of the Bible Still FALLS to FEED the FAMISHED

sen store. In fact, so plentiful is the supply of manna at certain times that one man in a single working day has been known to collect from 12,000 to 20,000 pieces, amounting to from five to eight pounds.

When the wheat crop is deficient in certain districts in western Asia Minor, manna is used as a substitute. It is ground into a flour which is baked into bread.

In Bagdad and Mosul the manna is cooked with sugar and made into round white cakes three inches in diameter and half an inch thick, with a sprinkling of wheat flour on the outside. Street peddlers sell these cakes as candy and in this form manna is greatly liked by both natives and Europeans as well. These manna cakes have a delicate aromatic flavor. It was samples of manna in this form that Consul Heizer sent to the Department of Commerce at Washington.

Scientists explain that the reason only small quantities of manna are found today in the region traversed by the Israelites on their journey from Egypt to Palestine nearly thirty-five centuries ago may be attributed to a radical change in vegetation that has since taken place. In the days of the Exodus vast tamarisk forests covered most of the "wilderness" spoken of in the Bible. These forests have been destroyed by the Arabs, largely for the production of charcoal, and the territory has become desert and desolate.

Elsewhere rains of manna have fallen frequently. Among such districts that have been so favored from prehistoric times are the steppes

and deserts of Armenia, the Caucasus, Persia, Kurdistan, Arabia and northern Africa.

Within the last one hundred years great "rains" of manna are recorded as having fallen in 1824, in 1828, in 1841, in 1846, in 1863, and in 1864. All of them occurred between January and March, the season of heaviest rainfall in the regions where the lichen grows. This circumstance is at least suggestive, although the natives believed that the manna fell from heaven.

Two of the most notable rains of manna happened in the years 1828 and 1841. During the former year the naturalist, Parrot, observed a shower of manna in Persia which covered the ground to a depth of six inches. It was undoubtedly carried by storm-winds from somewhere far distant.

Thirteen years later there was an astonishing fall of manna near Lake Van, in the eastern part of Asia Minor, covering many square miles to a depth of four inches. It was gray in color and pleasant to the taste. Live stock devoured it greedily, thereby suggesting to the inhabitants that it might be good for them to eat. They ground it into flour and made bread, which proved palatable and nourishing.

Thus again science and history in confirming a historical fact as told in the Bible, unite to show that the falling of manna may be called neither a miracle nor a rarity.

as small as hoar-frost, on the ground. And when the children of Israel saw it, they said one to another, "It is manna." And Moses said: "This is the bread which the Lord hath given you to eat."

Throughout the intervening centuries hundreds of millions of the earth's inhabitants have accepted as a miracle the biblical account of how the children of Israel were fed on manna during their forty years of wandering in the wilderness while journeying to the promised land of Canaan. Twentieth century science, however, does not record this event as a miracle, but rather as a very prosaic affair after all. This is the opinion of one investigator, Oscar S. Heizer, American Consul at Jerusalem. In one of his official reports Consul Heizer states that manna is being found in the regions of Upper Mesopotamia and Kurdistan and along the Persian frontier. It falls, he says, in the form of dew during September, October and November, and lodges upon the leaves of oak trees.

Immediately after falling the manna hardens and assumes the form of a grain, that is, "a small round thing, as small as the hoar-frost, on the ground." A piece of manna, however, varies in size from that of a pea to that of a Brazil nut. The average weight is about one dram.

Early in the morning, before the heat of the day, it is gathered by spreading sheets under the trees, which are shaken. The manna is then collected and stored for winter to be used as a food, or shipped to Bagdad for sale in the bazaars.

United States Consul Owens of Bagdad also has sent samples of manna to the Department of Commerce at Washington.

Scientists say that this remarkable food that "fell from heaven" and kept the children of Israel from starving during their wanderings, is in reality a variety of lichen, a scrubby, stunted growth that forms on stones. Its outside color is grayish yellow, but, when broken, the interior is white as a crushed grain of wheat.

As it gets older it loosens its grip on the rock, its edges roll back, and soon it becomes detached altogether, forming a rounded body with a central cavity. It is feather-light, and the slightest breeze will blow it hither and thither.

Thus it often happens that a wind storm carries great quantities of these lichens long distances, and afterward they are found piled in heaps and windrows. It appears as if they have fallen out of the sky, and ignorant people assign to the phenomenon a supernatural cause.

In the desert regions where these lichens grow, heavy rains usually follow a long dry season. Rains wash quantities of them into depressions in the ground, and subsequent evaporation of the water leaves heaps of them behind. The superstitious natives consider such a happening miraculous.

Analyses have shown that the dried lichens contain 65 per cent. of oxylate of lime and 25 per cent. of a starchlike and highly nutritious substance which is also found in the moss on which the reindeer feed in the frigid areas within the Arctic circle, and which in the latter case is the principle element of food. Botanically, mosses and lichens are closely related.

The lichen growing on a rock derives its water supply from the atmosphere. It can absorb from that source 85 per cent. of its weight in three days. On the other hand, it surrenders moisture with equal rapidity and by the time it is ready to detach itself, it is almost absolutely dry, which fact accounts for its lightness.

It is reported that the manna crops in western Asia Minor are bounteous and supplies of this food are now being imported into this country. The public may soon have an opportunity to taste manna such as that on which the children of Israel were fed nearly 35 centuries ago and to decide whether it is a worthwhile article of food. The time may soon come when manna can be bought in paper containers at the corner delicatessen store.

Before discussing the method of treatment we should first consider some of the causes of

THREE thousand four hundred and thirteen years ago the children of Israel, as the Bible narrates in the book of Exodus, crossed the Red Sea and came into the wilderness of Chur. While traveling through the wilderness of Sin they suffered from hunger and murmured against Moses and Aaron. But God heard their cries and sent them bread from heaven to eat. The Lord said unto Moses:

"Behold I will rain bread from heaven for you; and the people shall go out and gather a certain rate every day—at even ye shall eat flesh, and in the morning ye shall be filled with bread." And in the morning there lay a small round thing,

Is ODOR Due to VIBRATIONS?

THE sense of smell is the most acute of all the five senses, yet it is the one about which the least is known. Each of the five senses is the reception of something from outside the body; sight and hearing are the effect of vibration of the ether, of energy. In other words, is odor in the same category? ask W. G. Ungerer and R. B. Stoddard in Ungerer's Bulletin.

The authors reject this hypothesis and say that all the evidence of observed facts tends to support the theory that it is instead the molecules of molecular action, the contact of the molecules of the odoriferous material with the olfactory nerves.

It seems strange that science has never explained odor, so that the blenders of perfume are still "making use of forces and laws regarding the true nature and correct application of which they can have no real comprehension." They are working empirically. "The master perfumer is not the scientist, but the artist, the genius, the eluab and he has an instructive grasp of the elusive and baffling odor values."

Ungerer and Stoddard suggest a hypothesis upon which odor may scientifically be explained. They say: "There are few volatile substances which are completely odorless. That there are conspicuous exceptions to this rule is well known, the gases of the atmosphere being the most prominent. Yet a little consideration of these exceptions soon leads one to the discovery that nearly all the odorless substances possess a very simple molecular structure. Is there, then, some connection between complexity of molecular structure and odor?"

"We have assumed that odor is produced by

the impact of molecules on the olfactory nerves, and we know from experience that certain molecules are almost without effect, while others are so powerfully effective that our senses will detect their presence even when they are diluted to an unbelievable extent within the inert atmosphere. This difference might be sought in the variations in the size and shape of the molecules, just as the physical chemists have sought to correlate structure and physical properties, such as melting point and index of refraction.

"Modern chemistry offers a far better solution of our problem in its conception of the dynamic condition within the molecule. The atoms within the molecule are no longer supposed to be rigid and motionless, but to be in a constant state of vibration. This must give to each molecule a certain characteristic vibration which in effect influences it if it does not indeed determine the outward properties of the molecule."

"Here then lies the foundation for a real theory of odor and odor values. Odor is the response of the delicate olfactory nerves to these inter-molecular vibrations, vibrations which the most delicate instruments yet devised can hardly detect, much less record and measure. Here is the explanation of the observed differences in the odors of substances. Every pure substance has its own rate of vibration; this vibration may be such as to influence the olfactory nerves and produce the sensation of odor, or it may be too low or too high to be detected, just as certain other vibrations are outside the range of the eye and ear; vibrations within a certain range may produce a certain odor, while those of another range produce a different one."

Is NORTH POLE Moving to SOUTH?

AN analysis by the United States Coast and Geodetic Survey indicates that the north pole point is shifting southward toward the continent of North America. This means in effect that the cities of the United States are moving slowly to the north. However, you need have no worry that you will awake some morning to find the north pole in your back yard. The shift is almost negligible because of its slowness. The southward drift is a trifle over six inches a year, or less than a mile in 10,000 years. At this rate, New York would move to the latitude of Boston in a million years.

A London astronomer asserts that the distance between Naples, Italy, and the equator has shortened a mile and a half during the past 51 years and that Greenwich has moved half a mile toward the tropics in two decades.

The National Geographic Society says there is no question that latitudes change, but such changes are of no considerable magnitude and do not continue for any great length of time in the same direction. The variations are due to a slight wobbling of the earth like that of a top which is not spinning evenly on its axis. This irregularity does not change the direction of the axis itself but it does change the point on the earth's surface (the pole point) from which the axis emerges. By such changes most points on the earth would have their positions altered with reference to the poles and to the equator, which is always 90 degrees from the pole point and therefore follows it in any movement which it makes.

If the earth's simplest possible rotation had but a single wobble added to it, the pole point would trace a closed path; that is, it would return to the same position again and again after the completion of definite, equal periods. But there are at least two distinct and unequal wobbles known, one completed in about a year and the other in about 14 months. Their combination causes the pole point to trace lines that are very roughly elliptical and which cross and re-cross each other. However, these would change the

latitude of any city at most only 30 feet north or south of its mean position.

There are other possibilities in regard to change of latitude. One is that there are other as yet unrecognized wobbles extending over longer periods which cause the pole point to wander in circles or ellipses larger than the 60-foot radius ascribed to the two known wobbles. Another is that there may be forces in operation which shift the pole point steadily southward almost along a definite line of longitude. Finally, latitude changes might be due to local movements, either a sliding of relatively small sections of the earth's crust, or to a recently postulated "floating" of the continents.

How Baseballs Are Made

NEARLY all of the work of making a standard baseball today is done by machinery.

Some of the most highly developed machines are still "trade secrets" and are operated in locked rooms where no outsiders are permitted to see them in operation.

The ball is weighed five times in the course of manufacture, for it must weigh exactly five ounces.

A small rubber ball about an inch in diameter forms the centre of the ball. Around this rubber sphere is wrapped a few layers of coarse twine. By means of accurately adjusted machinery layers of blue and white yarn are then wound. During this process the ball is several times soaked in a cement solution and laid aside to dry in order to give it compactness. Finally a still smaller coil is wrapped snugly around the ball.

The cover is made of best grade horsehide, cut by hand and prepared for the purpose in a special solution. After the ball is put into clamps the cover is sewed on with cotton thread, which has great frictional strength. The cover seems as if it were made of the completed ball is polished.

How to FIND RELIEF at HOME from HAY FEVER

THOSE who have suffered year after year from hay fever, "rose colds," asthma and similar afflictions will welcome the information that in a large number of instances it is possible to cure these diseases permanently without going away from home, says Dr. Hermann M. Biggs, New York State Commissioner of Health, in one of his radio health hint broadcasts which is quoted by the Medical Times.

"Before discussing the method of treatment we should first consider some of the causes of

hay fever. True hay fever is due to a peculiar sensitiveness on the part of some persons to the pollens of certain grasses, weeds, plants or trees. Formerly, it was supposed that the pollen of the goldenrod and rag weed were alone the cause of hay fever, but now we know that while these two cause some cases many other pollens are also to blame. The earliest group of cases of true hay fever develop in April, are very few in number, and are due to the pollen of certain trees such as the birch and maple. The next group appears by the middle or end of May and lasts until mid-July,

while late hay fever begins in mid-August and lasts until frost. The pollen of the different grasses is responsible for a great majority of the cases. The pollen of roses and goldenrod is heavy and therefore not being widely scattered causes few cases. Occasional cases are caused by the pollen of daisies, asters, sweet clover, corn and far less often by that of other flowers and plants.

"What has been said applies to hay fever that occurs only at stated periods of the year. Many cases called hay fever that occur at odd times throughout the year and certain types of asthma are due either to the presence of adenoids or other nose obstructions. Such cases may also result from the sensitiveness of those persons to certain substances, such as dandruff from horses, dogs, cats or other animals, dust from feathers used in pillows, hair used in mattresses, etc., cotton, insecticide powders and orris root used in talcum powders. Asthma may also be caused by the use of certain foods to which these particular persons are sensitive. Eggs, strawberries and some of the cereals sometimes cause this trouble.

"In hay fever coming at practically the same time each year, a fairly accurate guess as to the cause can often be made by noting the particular grass or weed or flower pollen most common at that time. In hay fever or asthma occurring at odd times during the year it is wise first of all to have a competent physician examine the throat and nose for any obstruction in the upper air passages. If none can be found there, it should be noted whether the attack is preceded by contact with certain animals, absence of which gives relief. It should next be noted whether the patient is free from symptoms when away from home. If so, then experiments should be tried to determine the exact cause by substituting hair for feather pillows, cotton for hair mattresses, etc. Women and girls afflicted with either hay fever or asthma should be careful not to use talcum powders containing orris root. Note should also be made as to whether the symptoms always appear after eating certain foods, such as those previously mentioned and others known to affect some persons unfavorably.

"If these simple tests all fail, a physician can oftentimes decide definitely by inoculating into the skin of the arm minute amounts of a sterile extract of each of the pollens and other substances—considered capable of producing the symptoms. No discomfort is felt until the substance actually causes the trouble is injected. When a slight swelling, reddening and itching occurs. Once the right substance is thus detected relief from the affliction can usually be obtained by weekly inoculations of increasing doses of an extract of the substance in question, thus causing the body to manufacture its own antitoxin."

FORTUNES Made in BUTTERFLIES

FASHIONS change in butterflies as in other things. Even the scientists are at present unable definitely to say exactly what causes variation in the wing-markings of these insects. The fact that these markings do change, however, has awakened an extraordinary interest among collectors in all parts of the world. So much so that large sums of money are being paid

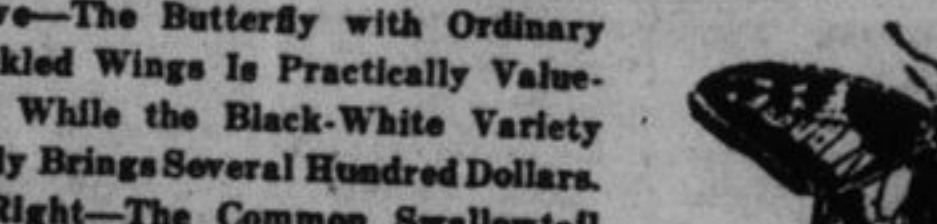
selves to those parts if they would find black swallow-tails. Black is undoubtedly a highly valued color, however, in any butterfly or moth. Considerable sums are paid for black magpie moths, the insect itself being a pest on the currant bushes of the fruit garden. Those with ordinary speckled wings are quite valueless, while "varieties" will be snapped up at five dollars each.

Perhaps the record for a "freak" common butterfly was reached in England recently when a black "white" butterfly was put up to auction side by side with some magnificent specimens of the greatly prized extinct large copper.

Curiously enough, there was actually a "variety" of the large copper itself in the same sale.



Above—The Butterfly with Ordinary Speckled Wings is Practically Valueless, While the Black-White Variety Easily Brings Several Hundred Dollars.

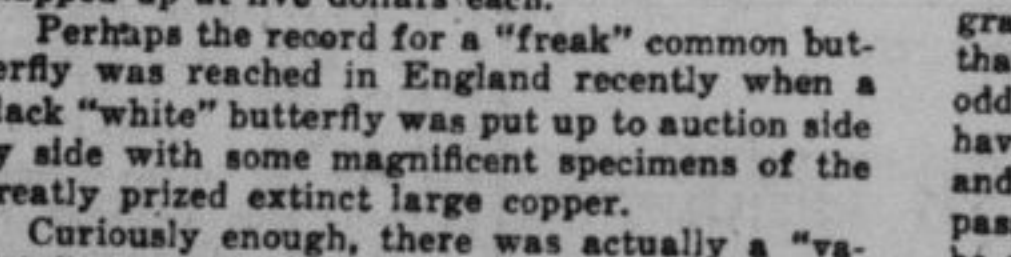


At Right—The Common Swallowtail Butterfly and the Black Variety, the Latter Bringing More Than \$300.

for these so-called "varieties" of species otherwise quite common.

One remarkable "catch" last season was that of a black swallow-tail butterfly in the Fen district of Cambridgeshire, England, and this almost unique insect has found a home in the cabinet of a famous collector at the price of some three hundred dollars. Had the butterfly been of the ordinary color (black and yellow), it would scarcely have been worth a quarter.

In England, the swallow-tail is what is termed one of the "local" butterflies. It can be taken every year, but only in the Fen districts of Cambridgeshire and Lincolnshire. The prize-winners of the present season must therefore confine them-



This found a purchaser at ninety dollars, a bargain, by the way, which, in truth, could not possibly be repeated, as the insect itself is now extinct.



The black "white" butterfly, however, created such a furor of excitement among the entomologists that it was eventually bought under the hammer at one hundred and seventy-five dollars, almost twice as much as that paid for the former insect.

This marbled white butterfly is quite a common meadow subject. Thousands are captured every year, and it is by no means impossible that another black "white" butterfly may pay the vacation expenses of some fortunate captor.

