

Mysteries of Nature

By G. Frederick Wright, A. M. LL. D.

ICE DRIVEN PLANTS AND ANIMALS.

Before the glacial period the plants which now flourish in the latitude of Virginia and North Carolina were growing in a happy family in Spitzbergen, northern Greenland, and on the Arctic shores of North America. Arctic expeditions have repeatedly brought back from the middle tertiary deposits north of Disco island the embedded leaves and fruit of magnolias, sassafras, hickories, maples, poplars, birches, lindens, southern cypress and several species of sequoias, including the gigantic forms now found only in California, and three kinds of ginkgo trees now peculiar to Japan. The evidence of these fossil plants is conclusive that just before the glacial period there was a warm climate all around the north pole.

Until the theory of the origin of species by natural selection was accepted, and the facts about the glacial period brought to light this distribution of trees and plants was a profound mystery. For the solution of the problem we are largely indebted to the late Prof. Asa Gray, who in 1858 read a paper before the American Academy of Arts and Sciences on the flora of Japan, which attracted the attention of the scientific world and opened the way to the full exposition of his theory, which was set forth in an address before the American Association for the Advancement of Science at Dubuque, Ia., in 1872. The way had been prepared for this work by the fact that the large collection of Japanese plants gathered by Commodore Perry's expedition in 1857, which opened Japan to the world, was placed in his hands for examination. The result was that it appeared that there was a striking similarity between the plants of Japan and those of the Altai mountains, of the Himalayas and the eastern portion of North America, and a striking dissimilarity between the plants of these regions and those of the Pacific slope of North America, while the most remarkable resemblance was between the plants of Japan and those of eastern United States.

The Pacific coast of the United States is rich in coniferous trees like cedars, sequoias and redwoods, but is conspicuously lacking in most of the trees familiar on the Atlantic slope. For example, there are not half as many maples, or ashes, or poplars, or walnuts, or birches, or oaks on the Pacific slope, and they are of such inferior quality that it is said "a passable wagon wheel can not be made of California wood, nor a really good one in Oregon." The Atlantic slope has four times as many species of non-coniferous trees as the Pacific slope, but only a little more than half as many coniferous species.

The first step in the solution of this problem is found in the relation of the land continents in the northern hemisphere to each other. Whereas, the southern ends of the continents project far out into deep seas so that they are widely separated from each other at the north they approached each other and are separated by shallow seas. The water in Behring strait is only 150 feet deep, and that in the sea only a few hundred feet deep, so that a slight elevation of the bottom of the ocean there would join Asia to America, and permit the migration of plants and animals from one continent to another. That these continents have been recently joined by such a change in land level is proved by the fact that bones of the mammoth have been found on both sides of Behring strait, and even on the Pribyloff islands, far out in Behring sea. A similar belt of shallow water extends from Greenland by way of Iceland to Norway. It is therefore easy to suppose a continuous land connection clear around the north pole enabling plants and animals to migrate freely. On the other hand, the general resemblance of species both of plants and animals in the lands surrounding the north pole is proof that there has been such opportunity for migration. Whereas, there is this great similarity in species in the northern hemisphere, there is a total dissimilarity between the species occupying the southern extremities of the continents in the southern hemisphere.

But with the coming on of the glacial period this happy family of species around the north pole was rudely disturbed by the new conditions. The lowering of temperature and the slow accumulation of glacial ice made it impossible for trees of a temperate climate to maintain their existence on those inhospitable shores. If they were to exist any longer they must migrate to milder climes. But how shall a tree which is fixed in the soil remove to better its fortune? Of course, a single tree is helpless in such a situation. But, as Prof. Gray wittily says, when a tree is driven to an extremity it can "take to the woods," and the forest can begin a majestic movement toward better climes.

As the conditions favoring the forest became severe along its northern belt they would become favorable over a corresponding belt stretching to the south. Over this belt the seeds would be gradually scattered by various agencies. Some seeds would be blown by the wind, some carried by streams of water, some by birds and squirrels and other animals. Whereas formerly such stray seeds had failed to find favorable conditions in these new fields, now they would be the favored ones, and thus the species which they represented would slowly spread southward until the glacial period had exhausted itself and the extreme limit of favorable conditions had been reached.

Thus it would result that the same species would be driven down to corresponding latitudes on both sides of the Pacific and Atlantic oceans, and we should have what now appears—namely, the same species of plants in

Japan, the middle United States and Europe and northern Asia.

But it still would seem to be a puzzle why the plants were not the same in corresponding latitudes on both sides of the American continent. Why should the species of plants in California be so different from those in Pennsylvania and Virginia? This is answered by considering the different conditions which prevail on the east and west sides of a continent. Because the world turns from west to east the prevailing winds in the northern hemisphere are from the southwest. The breezes of the Pacific coast are therefore sea breezes, laden with moisture, while those in the eastern Atlantic states are land breezes, which have been largely bereft of their moisture and are subject to greater alternations of temperature. The constant action of these diverse conditions would have a direct effect to favor some species on the Atlantic coast that would not be favored on the Pacific, and vice versa. Thus we have everything accounted for in a most natural way.

The reason why these plants have not returned to Greenland and Spitzbergen is that the glacial period is not yet over. It still prevails in those northern regions. But they have started on their northern journey and have partially recovered the ground lost. Some have already attained their original homes, leaving, however, many stragglers on the way. The main body of arctic vegetation is the same with that which covered the country of the middle Atlantic states during the climax of the glacial period. Of the straggling remnants still left in favoring situations one of the most interesting is Scotch heather, which is found not only in Labrador, but in a few places in Massachusetts, like Andover and Cape Cod. In all the rock gorges opening into Lake Erie remnants of the glacial vegetation are preserved in the sequestered and cool shady nooks. Some such are also preserved in similar narrow, cool gorges opening into the Ohio river below Cincinnati.

But the mountains formed the best retreats for the arctic plants, which were following up the receding ice sheet. Alpine plants are found on the high elevations of the White mountains, and on the high peaks of the Rocky and Sierra Nevada mountains as far south as New Mexico, but are absent over all the intervening areas.

In some respects the effect of the glacial period upon animal life and distribution was even more peculiar than that on plants. During that period a large number of arctic species were crowded down into central Europe and into the middle and northern states of the Atlantic coast and Mississippi valley. In company with man's remains there are found those of the grizzly bear, the Irish elk, the reindeer, the musk ox and the arctic fox, while the ibex and the chamois, which now occupy the high mountain crags, descended to the valleys. Several of these northern species now extinct were also present in these temperate regions.

The indirect effect of this incursion of arctic animals into the temperate zone was to cause the destruction of many animal forms which already occupied the region. Just before the glacial period there were living in America two extinct species of the cat family as large as lions, four species of the dog family as large as wolves, while the walrus was found in Virginia, the sea cow in South Carolina. There were also living six species of horses, the South American tapir and llama, a camel, two species of elephant and two of mastodons, a species of megatherium, three of megalonyx and one of mylodon—huge terrestrial sloths as large as the rhinoceros or even as the elephant. All these and several more species were either destroyed by the competition of the northern animals or were driven back into South America. The destruction of so many widely spread species of animals occupying North America just before the glacial period is one of the most startling revelations of geology.

Insects also, as well as plants and the larger animals, were compelled to reckon with the glacial period. Among the most interesting illustrations of this occurs in the White mountains, where various Alpine species of butterflies are found near the summit. In ascending Mount Washington one suddenly encounters near the top whole swarms of butterflies (Goneis Semidea) so that, as Prof. Samuel Scudder has said, as far as insect species are concerned, "in ascending Mount Washington we pass, as it were, from New Hampshire to northern Labrador and the southern extremity of Greenland." Similar species occur also on the summit of the Rocky mountains. The story is the same. Dispersed far and wide during the glacial period, these insects have at last been compelled to take refuge on the summits of the high mountains, where alone glacial conditions perpetually prevail.

Newest Ocean Liners.
The White Star liners now under way will not be quite so large as was commonly supposed, although they will yet be considerably larger than the Mauretania and Lusitania. They will measure 850 feet between perpendiculars and 890 feet over all. The beam will be 92 feet and they will have a molded depth of 64 feet, which is four feet more than the depth of the Mauretania. A notable feature of the construction of these boats will be the power equipment, which will consist of two engines of 15,000 horse power driving the wing propellers and a 10,000-horse power turbine driving the central propeller. This combination will be sufficient to drive the ships at a sea speed of 19.5 knots.

Designs of Merit



LAWN-DRESS.—Of course, this dress is made up without lining in either bodice or skirt. Our model is in white lawn, but colored lawn or white spotted or printed muslin would be equally suitable.

The skirt, which is slightly full at the waist, has a deep-gathered flounce that is trimmed with insertion; it is gathered at the top, then set to insertion, which is joined to the edge of skirt below the three tucks; the top is gathered to a waist-band fastened at the back.

The bodice is cut to the waist, and is joined to top of skirt-band; it has a yoke of open-work embroidery outlined with insertion; the lawn is tucked three times between band and yoke. The lawn sleeves are also tucked, the tight-fitting lower parts being of embroidery to match the yoke. The waist-band fastens at the side under a rosette, from which hangs a knotted end finished with tassels.

Materials required: 10 yards lawn 36 inches wide, 1 1/4 yards embroidery 18 inches wide, about 8 1/2 yards insertion.

Design for Linen.—Here is a semi-princess dress of linen in a soft shade of pink. The front panel, that extends the whole length of skirt and bodice, is edged outside with embroidery edging about two inches wide; this is set under a heading of embroidery, through which narrow ribbons are threaded; the skirt is tucked twice above the hem at sides and back; and the fulness at waist is set in tiny tucks extending over the hips; tucks are also made over the shoulders, and in sets of three round the sleeve. The fastening is in center back.

Hat of fancy crinoline, trimmed with ribbon and ostrich feather tips. Materials required: for the dress, 7 yards 42 inches wide, 4 yards embroidery, 4 yards insertion.

WAYS OF CLEANING CHIFFON. CHIFFON FOR THE SLEEVES.

Material Requires Care in Cleaning, and Some Time Must Be Devoted to the Work.

Chiffon should be washed in soap lather by carefully rolling and pressing between the hands, then rinsed in clean water and stiffened in gum water, one tablespoonful to a quarter of a pint of water.

Roll in a cloth to absorb some of the moisture, but it must not be too dry when it is ironed.

To iron chiffon, it must be placed on the table wrong side up and ironed along the selvedge, as ironing across would displace the fibers and destroy the appearance of the delicate fabric.

When the chiffon is being ironed it ought to be held tightly up in front of the iron to remove crinkles that are produced by washing and to make it quite even and smooth.

Chiffon (ties with a natural crepe crinkle should not be ironed, but instead the ends should be pinned out on a table, the tie just stretched enough to permit of the crinkles falling into their natural shape.

When dry fold it without pressing the folds in, air and put carefully away.

LINGERIE WAIST.



Dainty waist of linen batiste made with groups of tucks and elaborately trimmed with embroidery and cluny lace.

All-Green Hats.
A recent whim is the all-green hat, the shape, perhaps, of drab green, surrounded only with quantities of foliage, and the brim lined with green aeroplane, or the hat might be arranged with very wide green ribbon velvet, manipulated into a flat bow, and nothing else, save for the brim lining of aeroplane, this fabric of charming texture being the latest notion in brim linings.

An all-green hat will look rather nice with the white linen or pique coat and skirt of the definite summer time, and might be accompanied by a green sunshade, and with a green collar facing to the coat. With a bunch of pink roses or carnations fastened into the white blouse worn with the suit this might be a very happy, cool, summery suit.

Buttons.
Buttons covered with the material of the gown on which they are employed are the latest development. A foulard frock just home from the dressmaker is trimmed solely with cords covered with the silk and with buttons of the same order.

Gives Right Touch to the Transparent Materials So Popular in Hot Weather.

The fashion of wearing transparent sleeves is certainly a comfortable one during warm weather; hence its great popularity, for these sleeves cover every type of arm imaginable—arms so fat they resemble small bolsters, thin arms, white arms and sawtooth arms. Indeed, until one has spent half an hour in the shopping district it is hard to believe there could be such a variety of arms. The fashion may be a pretty one as well as a comfortable one if the wearers would only back the sleeves with a thin white chiffon or mousseline de soie. This tone may be used whether the sleeves are white, black or a color.

A novelty in parasols is being shown by a Broadway house that will appeal to patriotic young women. The covering is of the regulation tan khaki, embroidered with emblems of the different regiments in scarlet mercerized thread.

Another novelty displayed at the same shop is a line of very pretty raffia belts at \$1 each. For wear with a tan linen or a pongee frock these raffia accessories are considered very smart.—Washington Star.

To Stretch Curtains.

Use a quilting frame or a curtain stretcher converted into a quilting frame by tacking strips of ticking or any heavy material doubled to inch width on the inner edges of the frame where pins have been. Temporarily pin the curtains on four corners and at intervals on side, then sew them on, instead of pinning them, with a basting stitch. Scalloped edged curtains can be sewed on two at a time and three or more plain edged ones. It is surprising to see no peaks in scalloped or straight edged and with less labor and time spent and with no sore fingers.

Hat Brims Turned Up.

Hats are turned up at all angles around the brim, and the small hats are made by turning up the brim of an ordinary size hat very sharply at each side, while the brim in front and at the back is quite narrow; sometimes the brim is turned up; the right side (while the trimming is exclusively on the left), and some times at the back.

The Scarf.

There is no end to the variety of the scarf. A remarkably pretty one was in a soft tone of pale blue, the ends embroidered in graduated gold spots. Another was in a curiously patterned green gauze, with blue in it. This was bordered with dull silver gauze laid on in a flat band around, and hemstitched. Even more curious is a gray gauze with the ends embroidered in overlapping scales like those of a fish, but in mother-of-pearl tone in the least like the ordinary sequin, but resembling some of the wonderful Japanese embroideries of the same kind.

Quaint Little Clock.

An odd little clock is in the form of a crystal ball suspended by a leather strap to the top of a stirrup iron. The iron, which is really of silver or gunmetal, stands on the desk or dresser on the metal base on which the foot rests when one rides, and the clock swings from its tiny leather strap.

This would make an ideal gift for the girl who rides and drives and loves horses.

TWO GOOD LITTERS OF PIGS A YEAR

Where This Is Accomplished the First Cost Is Comparatively Small—Some Good Points About Hogs—By E. T. Robbins.

A mature sow can raise two litters as successfully as one, and with no extra feed save that required for nourishing the second litter. Where only one litter of pigs is raised yearly from mature sows, it is difficult to keep them contented during the summer and fall unless they are fed so heavily as to become too fat.

An old sow which has raised a litter of March pigs and is bred again for September, will keep in good, thrifty condition during the summer on clover pasture alone, says Orange Cudd Farmer. If she is suckled down thin in the spring, because she was insufficiently fed at that time, she needs but little grain during the summer on good pasture to put her in fine condition again. One litter is enough for a sow in her first year. In her second year and thereafter she is not

the American Poland-China Record shows the average number of pigs per litter from yearling sows to be 6.65; two-year-olds, 7.56; three-year-olds, 7.88; four-year-olds, 8.28, and five-year-olds, 8.40.

The fall litter of pigs should be farrowed as early as September, so that the pigs get as much growth as possible before winter. This makes it necessary to have the spring pigs come in March. Of course pigs need good shelter and careful attention at that time, but one can better afford time to care for them in March before field work is well under way, than to take half as much time to devote to the young things in April, when plowing and other spring work are pressing.

The fall pigs will need less care at farrowing time, for the weather is



A Profitable Kind of Pigs.

doing full work if she farrows only once.

There is a wide-spread feeling that young sows that raise just one litter, and are then put in the fattening pen, are growing into money faster than if retained longer for breeders. This is because the possibilities of the second litter each year from mature sows are not fully realized. Again, mature sows experience less difficulty at farrowing, and raise more and stronger pigs than young sows.

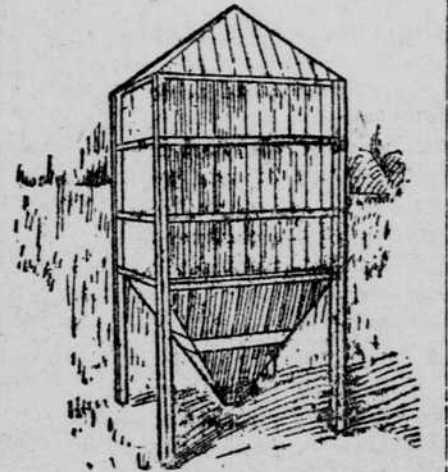
As to numbers of pigs, the following is rather an extreme example. My father in a recent year, from 15 mature sows, raised 104 pigs in the spring, all farrowed inside of two weeks, so they were uniform in size, with not one runt. A neighbor, from 100 gilts, raised less than 100 pigs, varying as much as two months in ages. A tabulation of the litters from 6,145 sows, recorded in one volume of

quite favorable for them. But fall pigs must be pushed as rapidly as possible, so as to be large enough to withstand winter weather successfully. It will not do to let them drag along on pasture with little grain. Well fed September pigs will weigh 50 pounds when winter sets in, and be fat and well covered with hair, so they do not suffer from the cold. Such pigs will thrive all winter if provided with plenty of feed and a dry, sheltered sleeping place. They must be fed some meat meal, tankage, or oil meal to the extent of ten per cent of their ration, or some shorts to the extent of 25 per cent, of ration, along with corn. These feeds, while expensive, do not need to be fed in large amounts in order to increase the growth of the pigs as much as 50 per cent. At the same time, pigs so fed will keep far more healthy than those fed on a straight corn diet.

MOUSE AND RAT PROOF CRIB

Novel Way of Getting Rid of Pests—Must Move When Corn Does.

The accompanying illustration gives an idea for a small corn crib that will be proof against rats and mice. Re-



Rat and Mice Proof Crib.

move all corn from the bottom. When any corn is taken out all of the corn in the crib moves, which will cause all rats and mice to leave.

SPRAYING POTATOES AGAINST BLIGHT

Directions Given by the Wisconsin Experiment Station for Making Mixture.

We take the following directions from the bulletin issued by the Wisconsin experiment station on spraying potatoes against blight:

"One hundred and fifty pounds of

Farm Blacksmithing.

Get a vise and set of taps and dies for one-quarter, five-sixteenths, three-eighths, seven-eighths and one-half inch bolts. These sizes will cover almost everything common on a farm, says Agricultural Epitomist. You can buy blank nuts and you can cut the rods any length you want with an ordinary cold chisel. You can put a nut on each end of the bolt. This answers just as well as to have a head on the end and a nut on the other. A great many farmers try to keep bolts of different sizes, but it is much better to buy the round rods and make your bolts as you want them.

Various Horseshoes.

In Iceland horses are shod with sheep's horn, while in the Sudan they are shod with camel's skin. A German not long ago invented a horseshoe of paper, prepared by saturating with oil, turpentine and other ingredients. Thin layers of such paper are glued to the hoof till requisite thickness is attained. The shoes thus made are said to be durable and impenetrable by moisture.

The More Live Stock Man.
The more I see of the men who raise live stock of this country, says J. Ogden Armour in the Breeders Gazette, the stronger is the impression which the stockman makes upon me. He seems to me the big, strong representative figure developed by our agriculture. As a rule he is the leader in his community. He is progressive. When he saw that the packers needed choice beef and were willing to pay

for it, he fell into line and began an up-to-date campaign to improve the quality of his stock. And when he saw that the packers and the stock yards people were willing to spend thousands of dollars in exhibitions and exhibition buildings at all the great live stock centers in order to encourage the breeding of the best meat animals obtainable, he responded with enthusiasm and spent his own money for imported breeding stock to bring his own herds and his flocks up to high standards.

Up on Hoyle and Blackstone.

Sir Frederick Thesiger, while engaged in the conduct of a case, objected to the irregularity of the counsel on the opposite side, who, in examining his witnesses, put leading questions.

"I have a right," answered the counsel, "to deal with my witnesses as I please."

"To that I offer no objection," retorted Sir Frederick; "you may deal as you like, but you sha'n't lead."—London Tribune.

"MAKES BETTER RAILROADS."

Western Writer Pays Tribute to Railroad Magnate as Builder-Up of the Country.

Mr. Edward H. Harriman is on a trip to Europe. Ordinarily there would need be nothing added to this announcement beyond an exhortation to Emperor William to chain down his railroads and to other monarchs to put their crowns and other valuables in the safe at night. But Mr. Harriman is going off on a pleasure trip, and so many mean things have been said about him that it will not hurt any to change the tune a moment while he is out of the country and not able to take any advantage of the lapse from the cold attitude of severity that is usually used in mentioning the name of Harriman.

Of all the great railroad men developed in this generation, E. H. Harriman is easily the biggest and the best, says a writer in the Hutchinson (Kan.) Daily News. The head of a railroad company, under the rules of the game, must work for his stockholders, whether it is for the advantage of politicians, shippers or consumers. It is his job to do the best he can for the interests entrusted to his care. Harriman is not only a financier, but he is a builder and an operator. Lucky is the town, city or community that has a Harriman road. He insists on a good roadbed, level track, safe track and the convenience and comfort of the traveler and the shipper. The Harriman roads are noted as the best in the country. When Harriman gets hold of a one-horse or played-out track and right of way he proceeds to put it in first class condition. He does not raise the rates of fares, although he doubtless charges "a plenty," but he insists that enough of the funds go into real improvements to make a railroad. And that is where he stands ahead of a good many others and why Harrimanism is not such a bad thing as some people have been led to think. He makes better railroads, and there is more need for improvement that way than there is in some others which are being discussed. So far as we can see, he believes in giving every interest along his road a fair deal.

He is a public benefactor from that standpoint. He uses his power fairly. He is a great man, and as good or better than the ordinary citizen who looks upon him as the personification of the money power, seeking whom it may devour. He is a strong man in the financial world, but that should not be against him, when the financial world is the object which most of us want to reach. He is a good American and he spends his money on American railroads, not on foreign titles, race horses, old editions or other bad habits. If he is not perfect—and we don't think he is—he is no exception to the rule and is worthy of the praise of his fellow citizens for the good he does and has done.

Laughter a Series of Barks.

Laughing is barking, say the scientists. The neck and head are thrown back while a series of short barks are emitted from the throat. However musical the barks may be, they are barks. The laugh begins with a sudden and violent contraction of the muscles of the chest and abdomen. But instead of opening to let the air pass out of the lungs, the vocal cords approach each other and hold it back. But they are not strong enough to exercise such opposition for more than an instant, and the air, which is under pressure, promptly escapes. As it does so it makes the vocal cords vibrate producing the bark.

This obstruction and liberation of the air expelled from the lungs repeats itself again and again at intervals of a quarter of a second. There are thus in a hearty laugh four barks a second, and if continued, they go on at that rate as long as the air reserve in the lungs holds out. The empty lungs must then fill themselves, and this interval is marked by a quick gasp for breath, after which the barks are renewed. The barks occur in series with gasps for breath at intervals.

When laughter is violent, the entire body participates. The upper part of the trunk bends and straightens itself alternately or sways to right and left. The feet stamp on the floor, while the hands are pressed upon the loins to moderate the painful spasms.

Interviewing the Professor.

"So you don't think Mars would reply, even if we did send signals?"

"I am almost convinced that there would be no response," answered Prof. Thinkum, adjusting his glasses.

"Then you don't believe that Mars is inhabited?"

"On the contrary, I think it extremely probable that life similar to our own exists on the sister planet."

"But you don't give those people credit for intelligence equal to ours?"

"Yes, I am inclined to credit them with even greater intelligence than we display. There are many indications that they have a civilization older than ours, in which case they should have too much sense to fool away their time on any such impractical proposition."

Jenkins—No, sir, he didn't. And when he tried to answer back, I just hung up the telephone receiver and walked away.

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