

Correspondence.

The Progress of Electrical Science.

To the Editor of the Scientific American:

I have been almost a constant reader of your most valuable paper covering a period of more than twenty years. I have always taken great interest in your "Notes and Queries" department. Twenty years ago the most important queries and answers related to steam power, boilers, etc., interspersed with how to make cements, inks, paints, comparative velocity of the rim of a buggy wheel as compared with the hub, etc. While admitting that the queries and answers were interesting and valuable, and highly appreciated at the time. I would ask your readers to compare the twenty years' ago SCIENTIFIC AMERICAN with to-day and note the wonderful change that time has wrought. Take any number of the SCIENTIFIC AMERICAN issued during the last six months, and from five to fifteen queries and items will be found bearing on electricity and electrical machinery in some form. If I am to judge from the great interest taken in electrical currents and machinery, a vast army of men are to-day engaged on electrical inventions alone. The inventive genius of almost the entire world seems to have centered on electricity, and it is endeavoring to solve further hidden mysteries. Such being a fact, what may we not expect during the next decade? I predict that electrical inventions will be brought forward that will astonish the world. Are we not only just now in the dawn of great inventions?

The SCIENTIFIC AMERICAN has certainly done its full share in the good work. W. M. SCHRÖCK.
Somerset, Pa., Jan. 26, 1892.

Ferns: Their Preservative Properties and Varied Uses.

MRS. N. PIKE.

People generally speak of the beauty of ferns, delight in collecting them for a herbarium or for ornamental purposes, and when the splendid specimens are exhibited in flower shows or conservatories, they deservedly call forth expressions of pleasure and admiration. They are known for their exquisitely formed and often daintily delicate fronds, but they are not generally credited with possessing economic value.

Ferns, lightly as they are valued, have always held an exalted rank in the community of plants; in fact, a dominant place in the past ages of the earth, when they formed one-fourth of the flora in the carboniferous period. Their use began early, for they entered largely into the formation of the coal we now use in so many ways, and on which so many industries depend.

To come down to modern times: every farmer is familiar with the common fern, the brake or bracken that grows so abundantly on open waste lands. Doubtless it is mostly only looked at as a weed to be rooted out. Yet, like many another simple wild plant, it has infinite uses in other countries, and perhaps, with a more extended knowledge of them, some of them might advantageously be adopted here.

The bracken, *Pteris aquilina*, has most wonderful preservative powers. The peculiar odor of this fern, like many others, renders it repugnant to insect life, and must be familiar to every one who has wandered among them, especially in open land on the border of woods, where it luxuriates in the bright sunlight, so different from many of its order, that prefer shade and seclusion. This *Pteris* possesses, moreover, some subtle quality inimical to the growth of the varied fungi known as mould. Both the odor and the anti-fungoid qualities are said to emanate from a peculiar essential oil and resin which very probably render the fern distasteful to most insects. Bees have, however, been seen to suck the moisture exuding from the stems of the young, undeveloped fronds.

It is well known that essential oils prevent fungoid growths, as may be easily seen by mixing a few drops in a common flour paste, and they will keep it from mould sporules for a long time. It has been suggested that a frond of the bracken be boiled in the paste and it would answer the same purpose.

The above mentioned properties are so well known in Europe that they are taken advantage of in many ways. In the shops of fruiterers in London and Paris and elsewhere, apples and pears are packed in hampers containing fern leaves, the vendors all asserting that they preserve the fruit fresh and good, and free from mould and decay. In the Isle of Man the bracken is in great demand for packing fresh caught herrings to be sent to the Liverpool market, and in Cheshire the farmers put up their new potatoes in hampers lined with bracken to send to Manchester and other cities.

The custom of keeping potatoes for winter in a "hog" or "bury" is general all over England. A large hole is dug and lined with straw and then filled with potatoes, a thick layer of the straw is also put over them and then covered with earth well sodded and packed down to keep out rain and frost. A gentleman who had been studying the

qualities of the bracken recommended a farmer to line his "hog" with the fern instead of straw. The old fellow was skeptical about any new-fangled notion. So he made two "hogs," one with straw and the other with fern. The winter proved a very severe one, and when he opened out his potatoes he was disgusted to find that those in the former were so badly decayed they were not worth the trouble of removing, while the others were, to his great astonishment, good and sound. In Somersetshire they use bracken altogether for their "buries."

In many parts of Germany and Denmark beech leaves and bracken fronds are used to stuff mattresses and cushions. Fleas and bugs, the household pests of the poor people, they say, cannot exist in such beds. Would it not be well for our farmers' wives to try bracken for their mattresses in change for corn husks, and be free from their midnight tormentors? In some of the country places in France small beds are stuffed with fern for children affected with scrofula. In the Western Highlands of Scotland the cottages are thatched with bracken fronds, but in other parts only the strong stems are used that are bound on by ropes made of either birch bark or heather. The Scotch peasantry burn great quantities and sell the ashes to the manufacturers of soap and glass, and the thrifty housewives burn the dried fronds in their ovens, as it makes so quick and brisk a fire, especially for their oat cakes, as it has no offensive qualities when well dried.

At Pont-y-Pool in Wales, where it grows most abundantly on the mountain sides, it is cut down in summer and burned in large heaps, then sprinkled with enough water to make the ashes adhere, rolled into small balls and sold in the market for its valuable alkali. The washerwomen prize it greatly, as it economizes soap. When used a ball is put in the fire till red hot, and then thrown into a tub of water, which in an hour becomes lye and is fit for use. Though the first frosts of autumn turn the bracken brown, it stands erect all winter without decaying. The hardy Welshwomen are often seen going out in sleighs to bring home loads of bracken. It is used as litter for the horses and mules employed on the tram roads, and is chopped up in their food also. When this fern is young it is greedily eaten by the far-famed Exmoor ponies, and donkeys delight in it. Swine also are fed by the cottagers in some counties on the boiled roots mixed in their wash, which is very serviceable in spring, when garden produce is scarce.

The bracken was put to a singular use in ancient times. In the Isle of Anglesea, North Wales, an urn was dug up many years ago containing the bones of a woman and child. Certain filaments were found adhering to the sides of the urn, and when microscopically examined they proved to be the remains of bracken fronds, that had evidently been used as a lining to the urn and covering for the bones. This fern grows in great abundance in the district where the urn was buried. In Normandy, France, the very poor peasants mix the succulent rhizomes with their bread in times of scarcity, and in Siberia they are used with malt when brewing beer. In some places it is used for dressing kid and chamois leather.

The bracken grows in every quarter of the globe. In North America it extends across Canada and is in every State of the Union as far as Mexico, south. According to locality it grows from one to ten and twelve feet high. If cut while green and left to rot on the ground, it improves the land and is very good for potatoes. Here the fronds are mostly tripinnate or winged. The name *Pteris* is derived from *pteryx*, a wing; and *aquilina*, from a supposed resemblance to a spread eagle, when the vessels in a transverse section of the underground stem are cut across. Everywhere legends linger round ferns—they sang of them in Eastern lore as emblems of secrecy and friendship; and the solemn Druids of old used them in their incantations.

Many kinds of ferns besides the bracken are eaten in India, especially by the hill tribes, but not as a staple article of diet, only as an accompaniment to other food. The *Asplenium nidus*, or birds' nest fern, is eaten in all the islands of the Indian Ocean, the young uncurled fronds being boiled in bundles like asparagus, and eaten as a salad. One of the *Polypodiums* mixed with barley and milk is used as a drink for persons recovering from inflammatory maladies. The common adder's tongue fern serves in the preparation of an ointment; a *Scolopendrum* as a pectoral and for spitting of blood; *Gleichenia* roots are full of effluvia, slightly bitter and aromatic, and are used in Japan, Persia, and Australia for food. The poor of most nations seem to turn to ferns in some sort as a substitute for other lacking necessities of life.

Many of these plants have astringent as well as aromatic properties, especially some of the *Adiantums*. From the Canadian maiden hair, sirup of capillaire is said to be made with an infusion of orange flower water and sugar. Not alone are ferns in use in modern days. In Pliny's time the frail stems of *Adiantums* received the name of *Cheveux de Venus*, and were used by ladies for strengthening and increasing the growth of their hair, and he tells how ladies beautified themselves by

using some preparation of these dainty ferns as a cosmetic. I believe no poisonous plants are known in the order.

The Sandwich Islands have always been noted for their ferns, among others a *Cibotum*, that grows very tall, and the foliage of the perfect ones, as they wave in the balmy winds, resembles an Oriental palm. From this noble tree the natives gather a soft, silky yellow substance resembling the finest merino wool, called *pulu*, and this they stuff their pillows and cushions with. A *Polypodium* is said to be of service in the preparation of cocoanut oil by the South Sea Islanders, and the bruised leaves of the fragrant *Angiopteris erecta*, also a graceful tree fern, are employed to perfume the oil.

Some of the *Blechnums* are used in making beer. The *Lastrea filixmas*, the male shield fern, is looked upon as a powerful vermifuge, for certain parasites of the human body. The Yakoots, of Siberia, take the fragrant wood fern, *Aspidium fragrans*, and make a decoction of it in place of more expensive Chinese tea. The *Asp. noveboracense*, the New York shield fern, has a sweet-scented variety, and if plants are taken and dried out of doors, they can be used to perfume a room, and the odor will last a long while.

The *Ceterach officinarum* cures affections of the chest; the down of *P. barometz* effectually stops hemorrhages; another of the *Lastreas* contains starch, saccharine matter, tannin, green fixed oil and resin. The rhizome has been used for tanning, and the ashes contain carbonate of potash.

One could go on *ad infinitum*, but enough has been said to prove of how much use the ferns are and have been. Truly one-half the world does not know how the other half lives—and it is very doubtful if doctors allow all the curative powers said by the natives of various nations to reside in ferns. I will only mention one more, viz., the *Osmunda regalis*.

This fine fern is well known as the "king fern." Several interpretations of the name are given from the old Saxon. *Osmunda* is said to come from *Osmund*, meaning "domestic peace," and the roots of the fern were boiled and put into some kind of liquor and given to those who were wounded or bruised. The name also signified mind and strength, in allusion to its invigorating qualities. A pretty legend is told of how it got the name of *regalis*. At the time the Danes were ravaging England, after burning the monastery of Avondale, they destroyed all the surrounding country. *Osmund*, the Waterman, took his beautiful wife and child to an island to hide them from the Danes. There were no caves, but the whole place was covered with this fern that grew very tall. He took provisions, and made mother and child lie hidden in the ferns while he went to help King Alfred to drive out the Danes. His arms at this time were successful and *Osmund* returned in triumph. When all had settled down again in peace, *Osmund's* fair child named the fern after her father and called it the king fern after Alfred. It is also said that the heart of the waterman may be seen in a section of the root.

Hops.

Census Bulletin 143 shows the production of hops for the year 1889 to be 39,171,270 pounds, grown upon 50,212 acres of land in seventeen States. The five leading States in the production of hops are:

| | Acres. | Pounds. |
|-----------------|--------|------------|
| New York..... | 36,670 | 20,063,029 |
| Washington..... | 5,113 | 8,313,280 |
| California..... | 3,974 | 6,547,338 |
| Oregon..... | 3,130 | 3,613,726 |
| Wisconsin..... | 967 | 428,547 |

The aggregate production of these five States was 38,965,920 pounds, being 99.48 per cent of the entire crop of the United States. New York produced 51.22 per cent of the entire yield from 73.03 per cent of the entire acreage. California produced the highest average per acre, 1,648 pounds. Washington followed closely, with an average of 1,626 pounds, and Oregon stands third in rank with 1,155 pounds. New York produced an average per acre of 547 pounds, or less than one-third that of California, while Wisconsin, with 443 pounds, stands the lowest of the five hop-growing States. The value of the crop of the United States for 1889 was \$4,059,697.

The crop of 1890 amounted to 36,872,854 pounds, which was worth \$11,105,424, or nearly three times the value of the crop of the previous year. This great advance in value is due to the fact that the average price of hops in 1889 was about 10 cents per pound, while in 1890 it was over 30 cents.

Freckles.

Some people are born freckled and other have freckles thrust upon them. The former class might as well accept their freckles as a dispensation of Providence, for nothing can be done for them. The latter can always get rid of their affliction by using a couple of drachms of sal ammoniac with an ounce of German cologne, the solution mixed with a pint of distilled water. Applied two or three times a day, states one of our contemporaries, it will cure the worst case of acquired freckles on record.