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THE SCIENTIFIC AMERICAN SUPPLEMENT

No. 328,

For the Week ending April 15, 1882.

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A NEW FIELD FOR INVENTION.

A correspondent, writing from New South Wales, calls attention to a wide and promising field of invention which does not appear to have been much explored. In all parts of the world there are many noxious plants, which cultivators of the soil find it difficult or impossible to eradicate by the means now in use. In New South Wales, for instance, there are two plants, rather slow of growth, which have taken possession of many parts to such an extent that the clearing of the land would cost more than the land is worth, where land sells for $20 an acre.

The first, which flourishes in the warmer parts, is a cactus called the prickly pear; the other, which is confined to the cooler parts, is the English sweetbrier, the English wild rose thus proving as severe an affliction to parts of Australia as the Scotch thistle has in other regions.

In view of the similarity of animal and vegetable life, and the ease with which animal pests can be destroyed by poison, our correspondent raises the query whether some means of killing these vegetable pests might not be found that would be cheaper and more efficient than manual labor. "There is a lot of money to be made in this country," he says, "by anything that would answer the purpose; and in other places I suppose it would be still more valuable."

The matter is obviously worthy of thoughtful attention. If poison is used, it should be the inventor's aim to find one that would be fatal to the plant to be exterminated and yet harmless to other plants, or at least not such as to leave in the soil elements that would spoil it for future cultivation. Poisons that would injuriously affect the water supply for use by men, domestic animals, or fish, should be not less carefully avoided.

Obviously the best way to dispose of a plant that is so irrepressibly thrifty as to be a nuisance is to find some way to utilize it. Not a few of our most useful plants were once rank pests, owing to their persistent invasion of lands employed for other purposes. When a use has been discovered for their fiber or other properties, the thriftiness which made them a nuisance now only adds to their value.

If no use can be found for the pest, the next best step would seem to be to study the conditions of its local abundance, and correct them, if possible, by means which will make the soil more suitable for other uses. The charming sweetbrier of the English roadside causes no trouble there. Transplanted to New South Wales it finds conditions in the climate and soil, or a lack of vegetable competitors, which enable or allow it to flourish to a degree impossible at home. Most weeds are "exotics" of this class. It may be that in the cases named, and in others like them, some mineral, harmless or else useful to cultivated plants, placed about the roots of the plant to be eradicated, may put an end to its thriftiness or kill it outright. Failing in that, the inventor may find poisons which, while they destroy the plant pests, will themselves be destroyed or made inert by the juices of the plant they act on; or poisons which kill specific vegetable growths without injuring other useful plants or animals.

The field, as has been already noticed, is a wide one, and comparatively unworked. The values to be affected by successful inventions in it are enormous, and the inventions themselves could hardly fail to be remunerative.

COMET *a* 1882.

The first comet of the present year has been discovered. Mr. C. S. Wells, an assistant at the Dudley Observatory, Albany, was the fortunate finder, and there is a fair prospect that the celestial visitor will prove a brilliant member of the cometic family. The comet was picked up on the 18th of March, in the constellation Hercules. It had then a tail five minutes long, and a bright nucleus, shining like a star of the eighth magnitude. The tidings of the discovery quickly made its way over the civilized world, and the newcomer has been closely watched by practiced observers through the best telescopes, whenever the sky has been clear enough to permit a glimpse of its presence. It behaves much like other members of the same family under the same conditions, increasing in brightness, spreading out its gossamer train, and speeding swiftly on a course that every day brings it nearer to terrestrial territory. In the short time that has elapsed since its first appearance it has traveled many million miles through the blue depths of space, nearly doubled its light, and more than doubled its tail.

Astronomers are busy in watching its movements, noting its indications, computing its elements, and deducing from these premises an ephemeris that will be a guide to its present position in the sky, and a means of detecting by a comparison of orbits whether the mysterious stranger is an old friend renewing acquaintance or whether this is its first visit to the clime of the sun.

Mr S. C. Chandler, Jr., of the Harvard Observatory, has computed the elements, and an ephemeris of the comet, from observations made at Ann Arbor and Cambridge, which, however, can only be considered as approximate, until confirmed and strengthened by future observations. Professor Boss, of the Dudley Observatory, has made similar computations, his results differing considerably from those of Mr. Chandler. The medium of the two computations is probably a more reliable guide to the path of the comet.

Some interesting facts and possibilities may be deduced from the combined labors of the two brilliant astronomers who are first in the field.

Comet *a* is remarkable for its small perihelion distance. According to Mr. Chandler it will come within a hundred thousand miles of the sun, passing through the corona and perhaps grazing the photosphere. Mr. Boss estimates the distance at ten million miles, but both observers agree in prophesying a very near approach. Few instances are recorded of comets coming so near the sun. Those of 1880, 1843, and 1680 had nearly the same perihelion distance, but these dates are considered by many astronomers as marking repeated returns of the same comet.

The new comet makes its perihelion passage about the middle of June, and a magnificent display may be anticipated about that time. It is noteworthy for its great brilliancy under present conditions. It is now nearly two hundred million miles distant, and yet it has a bright, well defined nucleus, and a well developed tail. It is reasonable, therefore, to infer that it is a large comet, since it presents so brilliant an aspect at a distance so immense. As it is coming toward us at the rate of 2,000,000 miles a day, it cannot long remain invisible to the naked eye.

This is the history of Comet *a*, as far as it is known, but there is a rich promise of an entertaining visitor in our sky during the months of April, May, and June. The erratic stranger is moving westward and northward, having greatly changed its position since it was discovered. It has passed from Hercules into Lyra, within a few degrees of the brilliant Vega, has now reached the confines of Draco, and is making its way into Cepheus, where it will arrive some time in May, when it will make a sudden turn and seem to plunge headlong toward the sun, till it reaches that fearful proximity to the great luminary which is a groundless cause of anxiety in many minds.

Those who know the most about cometic astronomy are the least disturbed concerning any untoward accidents in its passage; and astronomers are looking forward to its close approach to the sun as a possible means of learning something concerning the physical structure of the huge globe of fire that is intimately and inseparably interwoven with the destiny of the human race.

The elements of the orbit of Comet *a* are thus given by Professor Boss: Time of perihelion passage, June 15; longitude of perihelion, 49° 35′; longitude of node, 206° 39′; inclination, 74° 47′; perihelion distance about ten million miles.

April 14, R. A. 18h. 50m., Dec. 51° 9′ N. Mr. Chandler's computations give: Longitude of perihelion, 62° 30′; longitude of node, 200° 11′; inclination, 70° 51′.

As the comet approaches nearer the earth other astronomers will doubtless map its course, and repeated observations will modify results. Even if the figures are at fault in minute particulars, there is every reason to expect that a comet of grand and awe-inspiring proportions will in the coming months span the heavens with its gossamer train; that there will be intense excitement in watching its near approach to the sun; that it will be observed and studied as comet was never observed and studied before; and that unless men of science are greatly mistaken, it will take rank with the distinguished comets of 1811, 1843, 1858, 1861, and 1880 on the cometic annals of the nineteenth century.

FISH CULTURE IN AMERICA.

The eleventh annual meeting of the American Fish Cultural Association began in this city April 3. A large number of the more active State and national Fish Commissioners and other friends of fish and fishing were present.

The meeting was called to order by the Vice-President, Mr. George S. Page, of this city, who gave a most encouraging account of the success which had attended the artificial propagation of trout, shad, and black bass.

The Secretary, Mr. Barnet Phillips, read a paper by Mr. H. D. McGovern, of Brooklyn, on the habits, endurance, and growth of the carp. He advised the putting of a few carp in trout ponds to keep the ponds clean.

Assistant United States Commissioner Mather read an interesting paper on a remarkable development of embryo salmon. It had been his belief that the absorption of the sac was necessary for the complete development of the young fish, but he had been convinced of the contrary by an accident which happened in a newly constructed hatchery at Roslyn, L. I. The imperfect tarring of one of the troughs caused a liver disease in the young fish, leading to a casting off of the sac; but when placed in another trough the fish lived, took food, and developed naturally. The cause of the trouble he suspected to have been turpentine absorbed by the water from the exposed and freshly cut pine boards of the trough. Once before he lost a lot of young California salmon by hatching them in an oaken trough, the tannin of which perceptibly impregnated the water. These experiences led him to consider the cause of the extinction of trout below sawmills. He said:

"The theory of the fishermen near sawmills is that sawdust gets into the gills of trout and kills them. This may be true to some extent, but I doubt it, for the reason that sand or other material does not appear to injure the gills, and I have taken adult trout below sawmills. I am inclined to think that the mills are destructive merely to the young by covering the spawning beds to some extent, but more by the absorption of turpentine from the pine or tannin from the oak, the evil effects of which we know too well."

Commissioner McDonald, of Virginia, described a successful method of transporting impregnated eggs to long distances, their development being retarded by reduction of temperature.

Mr. Blackford spoke of the recent shipment of 14,000,000