1800 and 1870, and three out of six show increases between 1870 and 1927. The changes at Gogīpatri and Poshkar, which are situated 15 miles apart, are directly contradictory. It can only be concluded that all the changes may be attributed to errors of observation or of star place, and that there is no evidence of continental drift. Nor, on the other hand, is there any disproof of the existence of a drift of the order of fifty feet per century.

The latitude and longitude data for India indicate very clearly that there is no rapid movement of that country in a north and south or an east and west direction. There is no possible way to tell whether or not there is a very slow drift. It will take another century or more, with repeated astronomical determinations of latitude and longitude, to get any clear idea as to the stability or instability of the Indian region. It is interesting, however, to have the valuable evidence contained in the report from India.

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U. S. COAST AND GEODETIC SURVEY

ANTAGONISM BETWEEN ZOOPHARMACOLOGY AND PHYTOPHARMACOLOGY

DR. DAVID I. MACHT has presented an interesting review of cases of the dissimilarity between the zootoxic and the phytotoxic action of various alkaloids and toxins.[1] To quote from his article:

> It has been the experience . . . that poisons produced by plants, or phytogenic poisons, are more toxic for animals than for plants, while poisons elaborated or produced by animals, or zoogenic poisons, are commonly much more toxic for living plant protoplasm than for living animal tissues.

It would be possible to extend this idea of an antagonism between animals and plants to the subject of diseases and their treatment. If we consider the bacterial diseases of animals as diseases in which a plant (the bacterium) is infecting an animal host, we find that these diseases are, as a general rule, virulent. The infecting organism does not show any compatibility with the host, and produces various highly toxic substances (the bacterial toxins) which circulate in the blood stream and very rapidly bring the disease to a crisis from which the animal either dies or recovers. In the case of recovery, we find a very marked protective reaction on the part of the animal host, as indicated by the production of various immunological substances, the antitoxins, bacteriolysins, agglutinins, opsonins, etc. The net result is either that the plant (bacterium) kills the animal, or that the animal kills the plant. We have, therefore, in this case, no compatibility between the two forms, but instead a marked incompatibility.

[1] SCIENCE, 71: 302–306, March 21, 1930.

When we consider the infestations of an animal host with animal parasites, we have a markedly different picture. The host and parasite live together without any marked protective or offensive action on the part of either. When death occurs in these conditions, it is a result of the gradual destructive action of the parasite on some particular tissue of the host. The tapeworm, the liver fluke, the malarial plasmodium, the trypanosome, the filaria worm, the spirochete and the intestinal ameba may be taken as examples of this type of infesting organism. These organisms do not produce any great amount of toxins, and do not stimulate the host to form any great amount of protective substance. The host and parasite are seemingly quite compatible, and live together in what might be called a semi-symbiotic relationship, until gradually the infesting organism produces enough organic damage to the host to interfere with normal function. These diseases are, therefore, of a chronic type as compared with the virulence of the bacterial diseases.

This antagonism between animals and plants is reflected in the treatment of our diseases. If we wish to cure a bacterial disease we either let the patient prepare his own defensive substances (let the patient get well), or we make use of the same defensive substances prepared by another host (the antitoxins). Ordinarily, treatment and medication are valuable only in so far as they make for the physical welfare of the patient. If we wish to cure our infestations with an animal parasite, we must make use of various plant extracts (quinine and emetine are examples), or resort to the preparation of synthetic chemotherapeutic agents. The patient is practically entirely powerless to cure the disease completely, although he may reach an equilibrium with the parasite, in which the disease is to all intents latent, but from which condition the disease may later flare up and the patient suffer a relapse.

We may, therefore, entrust the treatment of bacterial infections to the patient, the physician or the bacteriologist and immunologist, knowing that their efforts will be assisted by the natural antagonism between the host and the infecting organism. In the parasitic infestations, the host, the physician and the parasitologist can do no more than describe the disease. The cure of the disease must be sought for in the growing field of chemotherapy.

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TEREDOLITHUS, A NEW COLLECTIVE GROUP NAME

QUITE a number of fossil ship worms have been described under the generic name Teredo. Most of