MEDICINE

Diphtheria Toxoid Treatment For Leprosy Fails In Trials

In Study of 71 Patients Volunteering, Control Group Did Better than Those Receiving the Toxoid Treatment

HOPE that diphtheria toxoid, the substance that protects against diphtheria, would prove a cure for leprosy is dispelled by its failure so far to improve the condition of leprosy patients at the U. S. Marine Hospital, Carville, La.

The treatment aroused widespread interest when an American medical missionary to Thailand, Dr. D. R. Collier, reported favorably on his results with the treatment which was first suggested by a German physician, Dr. Manfred J. Oberdoerffer.

Trial of the treatment was started at Carville in 1940. Of 11 patients given the treatment for more than a year, one is slightly improved, three are in a stationary state and the rest are in a worse condition than at the start of treatment, Dr. G. H. Faget and Dr. F. A. Johansen, of the U. S. Public Health Service, report (*Public Health Reports*, February).

In a more extensive and carefully controlled study, for which 71 patients volunteered, diphtheria toxoid was given to one-half the group and the broth from which it was made was given to the other half. The latter, control group, did better than the group given the toxoid.

The experimental treatment will be continued for another two months. After three months of further observation, a final report will be made.

Science News Letter, March 21, 1942

ASTRONOMY—PHYSICS

Sun Is Vast Magnet, Larger And Stronger Than Earth

Magnetic Poles of Sun Resemble Those on Earth in Being Removed From Rotational Poles But Less Distant

CLOSE relations between events on the sun and conditions on earth, due in part to the magnetic nature of both great globes, were traced in the Arthur Lecture, delivered at the Smithsonian Institution by Dr. John A. Fleming, director of the Department of Terrestrial Magnetism, Carnegie Institution of Washington.

The sun, Dr. Fleming stated, is a vast spherical magnet, on the same essential pattern as the earth, except of course that it is much larger. Force of its surface magnetic field is also much greater —about 100 times as intense as the earth's.

The magnetic poles of the sun resemble those of the earth in not being located exactly on the rotational poles. The eccentricity is not so great on the sun, however; its north magnetic pole is only four degrees removed from its north rotational pole, whereas the earth's magnetic north pole and rotational north pole are 11.5 degrees apart.

The sun's magnetism does not directly affect the magnetic field of the earth. Despite its hundred-fold greater magnitude, it is still too feeble to produce noticeable changes so far away. The great magnetic storms that sweep about the earth from time to time, almost always accompanied by auroral displays, are directly traceable to streams of electrical particles poured through space; these grow greater and less in step with changes in solar magnetism.

Magnetic storms, it should be pointed out, are not related to electrical storms or other visible and audible disturbances in the earth's atmosphere. These are relatively local affairs, whereas the great magnetic storms are world-wide, and are utterly silent and imperceptible to human senses. They make themselves evident mainly through their disruptive effects on wired and wireless communications when they are at their height.

Auroras, the only visible effects or concomitants of magnetic storms, are relatively remote affairs. Whereas the highest clouds of "weather" storms are only a few miles up, the lowest of the polar lights that have ever been measured have had altitudes of about 50 miles, and they range from that up to 300 miles.

Science News Letter, March 21, 1942

ASTRONOMY—PHYSICS

Most Powerful Magnetic Field Found in Sunspots

THE giant group of sunspots that was visible to the naked eye from February 25 to March 1 had the most powerful magnetic field ever measured at the Mount Wilson Observatory.

On two days the magnetic field attained the value of 5100 gauss. A strength of 3000 gauss is about average for most large spots. Although spots have been photographed and studied at Mt. Wilson on every clear day for over a quarter of a century, not one has ever exceeded this value. The spot-group was also remarkable in that it contained magnetic fields of opposite polarity almost in contact, like the north and south poles of a horseshoe magnet, instead of being widely separated as is usually the case.

The spot-group was held responsible for the violent magnetic storm which began about midnight on March 1 and lasted for 24 hours. The magnetic field of the spot itself is not believed to have caused the storm, but rather charged particles projected from the spot at a high velocity toward the earth. Frequently during magnetic storms telegraph and teletype service is disrupted and radio transmission seriously affected.

The spot-group is now out of sight on the side of the sun turned from the earth but should be brought into view again by the solar rotation about March 22.

Such a large outburst of solar activity is of exceptional interest in that it occurred only two years from the next predicted minimum in sunspot frequency. The last minimum of the 11-year cycle was in 1933 and maximum about 1937.

Science News Letter, March 21, 1942

Insects have been on earth for 50 million years; man for 500,000.