SCIENCE NEWS

Science Service, Washington, D. C.

A NEW SUNSPOT CYCLE

THE sun has entered on a new 11½-year sunspot cycle, during which the freckles on his face will become more and more numerous for half that period, and then wane to a minimum in 1954 or 1955. The first group of spots identified as belonging to the new cycle have been photographed at the Naval Observatory by Mrs. L. T. Day. It was observed and its magnetic polarity noted by Edison Hoge at Mt. Wilson Observatory, Calif.

The first indication that the new spot group is the first of a new sunspot cycle was given by their position, well away from the sun's equator. The last spot group of the old cycle, close to the equator, was visible at the same time. Then an instrumental check-up showed that their magnetic polarity is opposite to that of spots in the cycle just closing. This reversal of polarity is a "sure sign" of the opening of a new cycle.

Sunspot abundance has been shown to have a direct relation to radio reception. When they are most numerous, the sun is giving off intenser streams of atomic particles, which affect the height of the world's "radio roof," the Kennelly-Heaviside layer, and hence the range of radio signals. Their possible effects upon terrestrial weather of solar radiation connected with sunspots is still a much-debated point.

Several notable particulars were pointed out in the wire from Mt. Wilson Observatory which notified Science Service of the first observations made at that place: "The first sunspot group definitely belonging to the new cycle was observed by Edison Hoge on May 16 at 9 A.M., PWT, at the 150-foot tower telescope of Mt. Wilson Observatory.

"The spot group extended from heliographic latitude south 40 degrees to 44 degrees, and had magnetic polarities opposite to spots of the old cycle in the southern hemisphere. It thus satisfies the two fundamental characteristics of spots of the oncoming cycle: that it be in a latitude much greater than the average latitude for sunspots (15 degrees), and that it have a magnetic polarity opposite those of spots of the old cycle in the same hemisphere.

"This is the first time since 1889 that the first spot of the new cycle has been so far south of the equator. The first spot of the present old cycle was seen on October 10, 1933, in latitude 26 degrees north.

"The spot appeared near the edge of the sun's disk that is being carried from view by the solar rotation. When last observed on May 17, it was increasing in area. The spot will vanish on May 19 and if it survives the journey on the side of the sun turned away from the earth should reappear on June 3."

THE PRODUCTION OF PENICILLIN

THAT the production of penicillin, the chemical from mold, which outdoes the sulfa drugs in curing many kinds of wound infections and germ diseases, is now being pushed to the utmost to make it available for our armed forces, is reported by Dr. A. N. Richards, chairman of the Committee on Medical Research of the Office of Scientific Research and Development, in the *Journal* of the American Medical Association.

The use of penicillin to treat soldiers returned from the Pacific area with unhealed compound fractures, osteomyelitis and wounds with longstanding infection was started six weeks ago. Results of this treatment started at Bushnell General Hospital, Brigham City, Utah, have been so encouraging that plans are now being made to continue studies of its value in treating both wounds and venereal disease in sixteen Army hospitals. The Navy plans similar though less extensive clinical trials of penicillin.

Production of penicillin, in spite of intense efforts to meet military medical needs, has in no instance gone beyond the pilot plant stage. In most plants it is still in the laboratory stage. Some sixteen drug manufacturing companies are now engaged in its production or intend to be soon. The supply for civilian needs in the near future will be very limited, he states, unless production expands at a greater rate than can now be foreseen.

The chief handicap to large scale production lies in the fact that the mold produces only very limited amounts of the germ-fighting chemical. An exceptionally high yield would be in the order of about one thirtieth of an ounce by weight from about twenty quarts of culture medium on which the mold that produces penicillin is grown. And it takes days of mold growth for production of this minute amount.

Discovered by Dr. A. Fleming, of St. Mary's Hospital, London, in 1929, the curative possibilities of penicillin were first announced in 1940 and 1941 by Professor H. W. Florey, Dr. E. Chain and collaborators of the University of Oxford. Following a visit to this country by Professor Florey, and with the encouragement of the Medical Research Committee and the National Research Council, research looking toward the production of penicillin was started in the fall of 1941 by Merck and Company, E. R. Squibb and Sons, Charles A. Pfizer and Company, the Lederle Laboratories and perhaps others.

More than 300 patients have been or are being treated with penicillin and Dr. Richards states that "there is good reason for the belief that it is far superior" to any of the sulfa drugs for staphylococcus aureus infections with and without blood poisoning, including acute and chronic osteomyelitis, cellulitis, carbuncles of the lip and face, pneumonia, empyema and infected wounds. Penicillin is also extremely effective in treating hemolytic streptococcus infections, pneumomoccus pneumonia and gonorrhea.

TOOTH DECAY

TOOTHACHE may become a rare occurrence when an ideal diet is eaten throughout childhood. This hope is raised by three years of experiments reported to the American Dental Association by Dr. Julian D. Boyd, of Iowa City.

After observing children at the State University of Iowa for 17 years and making an intensive study of more than 200 children during the project just completed in

collaboration with the late Dr. Charles L. Drain, Dr. Boyd says: "Surely, the dietary approach offers the most effective means of attack on the problem of caries now available, and furthermore is one which is in step with current policies for the furtherance of public health. With prevalent improvement of children's diets, the seriousness of dental caries as a public health problem will decline to minor proportions."

Evidence that sugar content of the diet is probably of secondary importance will be presented in a forthcoming report. The diet of each child included in the studies was designed to be as near the nutritional ideal as possible. A strict regimen was possible because all the children were under medical supervision because of diabetes.

Possibility that the disease itself had influenced the rate of decay was eliminated; the amount of fluorine in the water, considered a factor in preventing decay, was also taken into consideration. It was concluded that diet alone influenced the rate of decay.

Public Health Service statistics indicate that the children in the area studied might expect to develop decay in two new tooth surfaces each year during the early teens, but the children observed by Dr. Boyd averaged only a fifth as much decay as expected on this basis.

FLOODS

No major industrial damage is to be expected from the floods in the Midwest, for they are not occurring in industrial areas. Our floods are doing damage to agriculture, and to some extent to rail and highway transportation—which is bad, to be sure, but not to be compared with what hit the Ruhr valley industries when the bomb-loosed wall of water roared down on them a few nights ago.

To inflict comparable flood damage to an industrial area in the United States, the waters around Pittsburgh would have to go on a rampage. The Pittsburgh region is the one great steel-making and heavy-industry area in this country liable to river-borne disaster. High water has been on the Monongahela and Allegheny and upper Ohio rivers in the past, and can be expected again—but not this year. Flood time in those valleys is late winter or early spring. By mid-May, flood-making weather conditions have shifted well to the west; now is the time for floods on the lower feeders of the Ohio, and in the slow, flat rivers of the prairie and plains regions west of the Mississippi.

Spring floods are to be expected as a more or less regular thing, according to meteorologists of the U. S. Weather Bureau. As winter draws to a close, warm, moisture-laden air moves up from the Gulf region, meeting the retreating cold air of winter on a long front extending in a general northwest-to-southeast direction. At about this time of year, the front stretches from the lower Great Plains to the middle Great Lakes.

Normally, a series of late spring storms may pour rain on the Midwest for several days, bringing flash floods to the smaller rivers and perhaps swelling the larger ones to highwater mark. But as a rule these storms pass over before really bad floods occur.

This time, we unfortunately got what happens once a generation or so: An unusually rain-rich atmospheric situation developed, and then stagnated, with the heavens weeping over the same stretch of country for just about a solid fortnight. And so the floods came.

ITEMS

SUCCESS in the first trials of a new method of treating goiter by medicines instead of by surgical operation are reported by Dr. E. B. Astwood, of Harvard Medical School, in the *Journal* of the American Medical Association. The medicines used are thiourea and thiouracil. They have the unique property of inhibiting the function of the thyroid gland, actually, it is believed, preventing production of its powerful hormone. Patients with the kind of goiter in which popping eyes, extreme nervousness and thinness are symptoms suffer from too much thyroid hormone. This excess hormone drives the life processes at too fast a pace and even acts as a poison in its effects on the heart. Operation to remove part of the gland and thus reduce the amount of hormone produced has so far been the chief method of treating the condition. The results reported by Dr. Astwood suggest that patients in future may not need to have this operation but can have their too-active thyroid glands kept under control by taking daily doses of thiourea or thiouracil.

COD liver oil and other fish oils may prove to be a source of a high blood pressure remedy, was reported by Dr. Arthur Grollman and Dr. T. R. Harrison, of the Bowman Gray School of Medicine at Wake Forest College, to the New York meeting of the Society for Experimental Biology and Medicine. Fish body and liver oils, they discovered, contain a substance which is effective in reducing high blood pressure in rats. The substance is not the same as vitamin A, which is contained in fish liver oils and which some have believed has a blood-pressure reducing effect. It is, however, similar to the kidney extract hailed a few years ago as a potential remedy for high blood pressure. Both the kidney extract and the fish oil substance can be given by mouth. Both reduce the blood pressure slowly and have a relatively prolonged effect compared with other substances that reduce high blood pressure. The blood-pressure reducing substance, however, is present in only small amounts in animal kidneys. Fish oils, on the other hand, are relatively potent in reducing blood pressures and are readily available. Therefore, in the opinion of the investigators, they "offer greater promise than kidneys" as a source of a blood pressure remedy.

A NEW aid to protect the hearing of workers in noisy industries, such as shipbuilding, and which promises to be "the solution for certain industrial ear problems" is reported by Dr. David A. McCoy, of Boston, in the forthcoming issue of the *Journal* of the American Medical Association. It consists of an ear mold of transparent plastic lucite, made to fit each worker's ear. This custom-made feature provides a good fit with no leaks of noise and one which is comfortable to wear all day. The ear mold reduces the intense and high-frequency noises, which are distracting, painful and deafening, but lets the wearer hear people talking without trouble. A further advantage of this plastic ear mold is that it shuts out the flying balls of hot slag which are a danger to the ears of welders and chippers.