

ASTRONOMY

New Sunspot Cycle

First group observed at Mt. Wilson and photographed at Naval Observatory. First time since 1889 that first spot is so far south of equator.

► THE SUN has just 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 was 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.

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.

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 there.

"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 Oct. 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."

Science News Letter, May 29, 1943

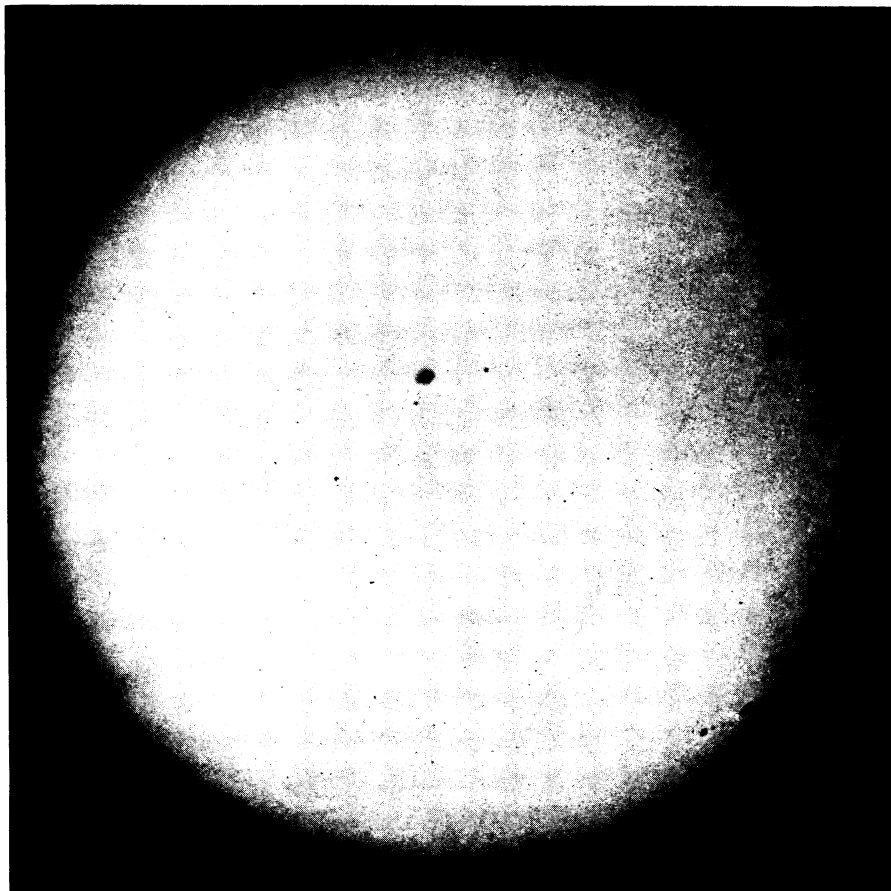
DENTISTRY—NUTRITION

Tooth Decay Can Be Prevented by Proper Diet

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

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 declares:

"Surely, the dietary approach offers the most effective means of attack on the



NEW SUNSPOT GROUP—This photograph taken on May 17 at 12:15.55 p.m., EST, at the U. S. Naval Observatory shows the new sunspot group in the lower right. It is unusual for the first spot of a group to appear so far south of the sun's equator. It broke out on the sun's face and did not first appear in view over the edge, as sometimes happens. The group in the center with the dark spot belongs to the old cycle.

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 by Dr. Boyd.

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 of the children were under medical supervision because of diabetes.

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

Three of the children who were known non-conformists were omitted from consideration.

Science News Letter, May 29, 1943

storage. To be considered, such biscuits should keep well for two years in reasonably air-tight nonmetal containers and meet other Army requirements.

Science News Letter, May 29, 1943

NUTRITION

Ten Shiploads of Pork Now Loaded on Three Ships

► DEHYDRATED PORK, following close on the heels of the development of dehydrated beef, is now going to the United Nations in large quantities, Herbert E. Robinson, assistant chief chemist of the Swift Research Laboratories, announced to the American Institute of Chemists meeting in Chicago.

Pork that would have filled 10 ships during the days of the first World War can now be reduced to two shiploads of dehydrated meat and a little more than a shipload of lard.

Savings in shipping space, producing the same effect as increased ship production, is possible through a process developed by the meat industry in cooperation with the U. S. Department of Agriculture.

Fresh cooked meat is ground fine, then dried slowly and evenly under carefully controlled temperatures. The finished product, in the form of light nut-brown granules, contains less than 10% moisture.

"When properly packed and vacuum sealed, it has good keeping qualities," Mr. Robinson stated. "It does not need refrigeration from time of packaging until used."

The meat is compressed during packing but resiliency of the tissues is not destroyed. When water is added later, the product has the same consistency as freshly cooked ground pork.

It can then be further prepared and served as patties, meat loaf or any other dish for which ground meat is used. The taste cannot readily be distinguished from that of freshly ground meat.

Mineral elements are reabsorbed from the meat juices during processing and temperature control keeps vitamin loss at a minimum. The high protein value is the same as in normally cooked meat, Mr. Robinson explained.

The lard is prepared in new war styles to meet Army and Navy specifications. It stays solid even at tropic heat and has a greater resistance to rancidity than ordinary lard.

Science News Letter, May 29, 1943

NUTRITION

New Cereals for Army

Converted rice, proof against weevils, is delicious when cooked. Pre-mixed cereal with sugar and dried milk can be eaten dry, with water, or cooked.

► CONVERTED rice, too tough for the bugs but delicious when cooked for Army mess, was described to members of the American Association of Cereal Chemists meeting in St. Louis.

Before dehulling, the rice is given a steeping process that takes nutrients from the hulls and puts them inside. The starch gelatinizes, making hard finished grain after milling.

This converted rice has the keeping qualities of milled grain but retains the higher nutritive qualities of brown rice.

Declaring that the product deserves more attention, Maj. Virgil O. Wodicka of the Quartermaster Corps, explained that its hardness even discourages the weevils that often destroy Army cereal supplies.

In a laboratory test weevils were put in a three-room compartment to live for six weeks. Each section contained a different type of rice.

"At no time during this period," Maj. Wodicka stated, "were weevils seen working in the converted rice, whereas at all times, the weevils were present and thriving in the other two types."

Despite its hardness, the rice cooks up well and has the advantage of staying in separate particles instead of forming a gummy mass. The product is now being produced by one U. S. company under a British patent.

Another development just adopted for

Army rations is premixed cereal. This is a mixture of at least two cereal products with sugar and dried skim milk.

Eaten dry, mixed with cold water, or cooked, it's always palatable, Maj. Wodicka maintained. Because premixed cereal needs no cooking it can be used over a wider range of field conditions than the cereal it replaces.

Most forms of premix contain some added fat which keeps the sugar and milk powder from separating out. And surprisingly enough, this stable fat delays the rancidity of natural fats in the cereal.

With cold water, premix resembles the ready-to-eat breakfast foods. A component of the mixture rapidly takes up hot water, however, to give it the character of a typical cooked cereal.

Research is now aimed at developing a compressed product that will still reconstitute into an appetizing breakfast food.

Another method needing more research, Maj. Wodicka pointed out, is the use of a small amount of cereal in canned meats. It has been found that this prevents the separation of fat and moisture and makes the meat easier to eat and more appetizing for the soldier.

Inviting the cereal chemists to submit samples of new K ration biscuits, Maj. Wodicka admitted that one of those now in use develops an off-flavor on long