

Recent Solar Activity and Radio Fadings

AMONG the recent solar phenomena, now betokening a considerably disturbed sun, may be noted two large groups of sunspots and a smaller one of special interest. Particulars of these groups are as follows:

	Date on Disk	Central Meridian Passage	Latitude	Maximum Area
(1)	January 17-30	January 24-2	19° S.	1500
(2)	January 19-Feb. 1	January 26-1	20° N.	600
(3)	January 24-Feb. 6	January 31-2	11° S.	1500

Areas are expressed in millionths of the sun's visible hemisphere.

Group (1), although of considerable size on January 19, declined rapidly after a few days and by January 27 had shrunk to less than 200 millionths in area. In association with group (2) an extensive bright $H\alpha$ eruption occurred on January 27 between 10^h and 12^h. This eruption was recorded on hydrogen spectroheliograms taken by Mr. Evershed at his private observatory at Ewhurst, Surrey; at Greenwich it was cloudy at the time. The first spectroheliograms, taken at 10^h 36^m and 10^h 46^m U.T. respectively, show a patch of strong $H\alpha$ emission at a position 22° N. and 23° W. of the sun's central meridian; at 10^h 55^m the eruption was still present, but at 12^h 7^m when the last spectroheliogram was taken the eruption had almost faded from view. The beginning of the eruption, normally very sudden, may therefore be placed at some minutes earlier than 10^h 36^m, and the ending, usually much less definite, at about 12^h 10^m.

It is interesting to record that a radio fading on short-wave wireless transmission was reported to have occurred at the same time on January 27 from 10^h 25^m to 11^h 50^m. A passing comment may be made on the fact that bright solar eruptions, associated with fadings of short-wave radio transmission over daylight channels, occurred at 27-day intervals on December 30 and December 3 last (see NATURE, Dec. 12, p. 1017 and Jan. 9, p. 61). Furthermore, this apparent 27-day sequence is carried back still further by the recorded radio fadings on November 6 and October 9. The requisite international solar data are not yet published to see whether bright solar eruptions were observed at the time of the radio fadings on the last two dates. At the time of going to press, it is reported from the Royal Observatory, Greenwich, that the third group of the above list has increased greatly in size, and on January 31 it was about 2500 millionths of the sun's hemisphere in area. The group is likely to be the largest recorded since 1928.

Recent Crystallography

IN his Friday evening discourse at the Royal Institution on January 29, Sir William Bragg discussed recent work in crystallography. When X-rays were first applied to the determination of crystal structure, the forms examined were naturally those of simple design. As the technique improved, and as insight was gained into the modes of construction of which Nature made the most use, it became possible to attack more difficult examples with success. Quite recently, the X-ray methods have been able to give material assistance in the examination of the

complicated bodies which play the leading part in the living organism, such as the proteins. X-rays have the special power of discerning regularities in the arrangement of the atoms and molecules of which substances are built. Until they were applied to this purpose, no one had suspected how usual and fundamental such regularities were. Nature's structures are generally based on the repetition of some unit of pattern. Even a very small crystal is formed of the orderly repetition of some atomic design repeated billions of times: and the minute but ubiquitous proteins of all living organisms possess this ordered arrangement though they are far too small to be seen in the microscope.

THE proteins all have the same basic composition. This again is an instance of the remarkable limitation to a few fundamental and elemental designs which is characteristic of the natural world. Every protein is composed, in the first instance, of a long chain in which two atoms of carbon and one atom of nitrogen form a pattern of three links, repeated throughout the whole length. Pendants of several varieties are attached to this chain, and one protein differs from another in the nature and variety of its pendants. The work of Astbury and others has shown the details of the construction of the proteins which make up the fibre of wool and hair and horn. It appears that in some substances, such as the uncooked white of an egg, the protein chain is coiled up into the form of a ball. Quite recently, Stanley, of the Rockefeller Institute, has been successful in isolating what is almost certainly the virus of the tobacco plant disease, and showing that it is a protein. This is most remarkable since the virus, by some means or other, is capable of multiplying itself. Bernal and his collaborators have shown that it is crystalline, and have used the X-rays to measure the regularities of its construction. It is of enormous size, relatively to the usual molecular dimensions, having a molecular weight of about twenty millions. It is needle-like in form. It has the optical properties of a crystal. This remarkable combination of properties is probably to be found in other forms of disease-producing virus, and the new discovery may well prove to be of the greatest importance.

Germany and the Nobel Prizes

DURING Herr Hitler's speech to the Reichstag in the Kroll Opera House, Berlin, on January 30, it was announced that he had issued a decree forbidding Germans to accept any Nobel Prize in future. This decree has been issued to avoid repetition of "shameful events of the past", which presumably refers to the award of the Nobel Peace Prize last year to Herr von Ossietzky, the German pacifist. The decree has been received with resentment in Sweden; but the Swedish Nobel Committee looks upon it as Germany's loss, for, since 1901 (when the first prize was awarded), nearly one quarter of all the Nobel prizes have been awarded to German citizens, and during the past ten years twelve out of the forty-one

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recipients of Nobel prizes for physics, chemistry and medicine (more than one quarter) have passed to Germans. Herr Hitler has decreed the creation of three German National Prizes of 100,000 marks (£8,300) each, to be awarded annually to Germans distinguished in art and science.

Gold Medal of the International Faculty of Sciences

AT the dinner following the annual conference of the International Faculty of Sciences applied to Human Progress, held in London on January 30, the Faculty's Gold Medal was presented to Mr. John Logie Baird, inventor of the Televisor, and managing director of Baird Television, Ltd. The chairman, Dr. Joseph S. Bridges, said the presentation was made in recognition of Mr. Baird's outstanding contributions to the science of television. In acknowledging the presentation, Mr. Baird indicated the progress that had been made since he first, in 1925, secured a television image with distinct definition. While the high cost of the apparatus at present is a drawback to its wide use among amateurs, he looked forward to a substantial reduction in the near future. Great Britain, he said, definitely leads in the science of television and is the only country in the world which has a television service. Among other speakers, Dr. L. E. C. Hughes commented on the necessity of scientific workers in all branches co-operating more closely to ensure that the achievements are properly applied to the requirements of human progress, and indicated the value of the International Faculty of Sciences in bringing into close touch such workers in all the countries of the world. Prof. B. W. Holman, replying on behalf of "The World's Scientific Workers", stressed the necessity for the social sciences being developed to keep pace with other sciences, so that the achievements of the research workers could be applied in accordance with the objectives of the Faculty, namely, human progress.

Aboriginal Tribes of the Malay Peninsula

WHILE of the aboriginal tribes of the Malay Peninsula the Sakai, the Semang and the Jakun, though by no means well known, have been the subject of careful investigation by a number of observers, the Temiar, a hill people of Perak, are virtually untouched in an anthropological sense. Yet they number nearly one half of the aboriginal population of 25,000. They have, however, been made the subject of a considerable study by Mr. H. D. Noone of the Perak State Museum, who has given some years to the investigation of their culture, their ethnic affinities, and their language, which is said to belong to the Austro-Asiatic group, and to show Indo-Chinese affinities. A preliminary outline of Mr. Noone's results in *The Observer* of January 24 is cabled from Singapore, where a number of the tribe are staying at present for the purpose of a record of their speech. It is there stated that Mr. Noone finds that the Temiar show traces of negritic influence and also an Australoid type, akin to the Vedda, but that, essentially a hill tribe, they link up with the hill stocks of Sumatra and other parts of south-east

Asia. They are lighter skinned than the Sakai and belong to a higher order of intelligence and culture. They build communal long-houses instead of the rude shelters of the Sakai, use the bow, and hunt with the blow-pipe. Their religion is animistic. For driving out the spirits of disease, they make use of the religious dance, in which the medicine man is an important figure. These dances are performed in the event of an epidemic, the dancers becoming 'possessed' by a tiger spirit. Eventually they fall into a state of trance, which sometimes ends in complete rigidity.

Tracks for Cyclists

THE recent Ministry of Transport accident inquiry proves that, notwithstanding the increase in the number of motor-cars, the casualties among motorists are decreasing. On the other hand, casualties to cyclists are increasing at an even greater rate than we might expect from the growth of the cycling habit. According to a paper read at the National Safety Congress, fatal accidents to pedal cyclists during the seven years 1928-34 had increased no less than 122 per cent. In *Roads and Road Construction* for January 1, it is suggested that the best way to check increase of these accidents would be to copy some of our Continental neighbours and increase largely the number of special cycle tracks available. In Germany there are already about 1,100 miles of track, about two thirds of which is State maintained. According to a recent statement, the decrease which has occurred in recent years in cycling fatalities in Germany can be attributed directly to the making of these tracks. The German authorities are aiming at the provision of no less than 24,000 miles of track. The opposition that cyclists' touring clubs make to special tracks seems to arise from a fear lest these tracks be made not wide enough, so that they will have to travel at the most two abreast, instead of as at present three or four or even more abreast. In the interest of the general safety, it is probable that the privilege of riding three or more abreast will soon be curtailed by law. In many places cycle tracks, like public foot-paths, could be built without fences, and probably a large mileage of existing 'green roads' could be utilized. If a number of special tracks were constructed every year, the annual cost need not be large. They would add safety, health and enjoyment to the weekly tours of many cyclists who at present have to pass through main roads crowded by rapidly moving vehicles and sometimes in an atmosphere full of noxious vapours.

Road Lighting in the United States

IN *World Power* of November some interesting statistics are given, relating to road accidents, which illustrate the responsibility of bad or non-existent lighting for road deaths and injuries. On the Mount Vernon Highway, near Washington, there were 2.87 accidents per million vehicles per mile, between July 1 and December 1, 1932. When lighting was suspended during the depression, the number of accidents increased to 7.02 over the same period per million vehicles per mile—an increase of 250 per cent.