

auroras and accompanying magnetic disturbances were due to the activity of a region of the sun centred in approximately lat. 10° S., long. 200° . In this area, the centre of an enormous spot group, extending over 8° in latitude and 16° in longitude, crossed the sun's central meridian within 4° of the centre of the disk at approximately midnight of January 30–31. It was therefore in a most effective position for a roughly radial stream of corpuscles to be intercepted by the earth, and the magnetic disturbance and aurora of February 3 must be attributed to it. The same region crossed the central meridian on January 3 and February 26, in each case showing a spot of moderate size, the times of central meridian passage being Jan. 3d. 9h. and Feb. 26d. 18h. respectively, and it is reasonable to suppose that the phenomena of January 7 and March 2 were associated with this area. The aurora and magnetic disturbance of March 1 were probably not associated with this area, but with a small group of spots in lat. 11° S., long. 228° , which crossed the central meridian on Feb. 25d. 0h. If these inferences are correct, the time intervals between the central meridian passages of the spots and the respective auroras, and the deduced corpuscular velocities are as follows:

Date of Aurora.	Time Interval.	Corpuscular Velocity.
Jan. 7.	4d. 10h.	250 miles per sec.
Feb. 3.	4d. 19h.	220 " " "
Mar. 1.	4d. 22h.	217 " " "
Mar. 2.	4d. 0h.	280 " " "

On February 25 there was an extensive belt of spot groups stretching almost across the disk in the northern hemisphere of the sun, but as there was no corresponding sustained magnetic disturbance, these groups appear to have been magnetically comparatively inactive, probably on account of their distance from the centre of the disk, which averaged about 20° . A large naked-eye spot in lat. 9° N. crossed the central meridian on March 2d. 0h., but

it is unlikely that this was associated with the aurora on that day or the previous one, both on account of the lack of the requisite time interval, and because, owing to the backward tilt of the sun's axis, it was 16° from the centre of the disk, where it would be less effective. It may, however, have been responsible for a moderate magnetic disturbance on March 5.

Mr. Craig suggests that the aurora of October 16, 1936, may belong to the same series as the recent displays, but this seems unlikely, as it would involve a mean interval of 27.5 days, corresponding to the solar rotation period in latitude 20° , whereas the spots involved in the recent cases had a latitude of 10° , with a rotation period of 27.05 days. A spot of appreciable size in lat. 12° S., long. 225° crossed the central meridian on October 11.8, and may have been responsible for the aurora and magnetic storm of October 16. As this position is very nearly the same as that of the group which has been suggested above as probably responsible for the display of March 1, it would appear that these two occurrences may be considered as belonging to a separate series different from that of the displays of January 7, February 3 and March 2. This case, however, illustrates the difficulty of assigning individual correspondence between solar and terrestrial phenomena, for on October 12 a sporadic group of small spots crossed the central meridian in lat. 18° N., which, owing to the forward tilt of the sun's axis at that time, was only 12° from the centre of the disk, and therefore in a more favourable position to produce terrestrial effects than the southern spot, the distance of which from the centre was 18° .

With the approach to the time of sunspot maximum, conditions for the production of the aurora are likely to be frequent during the next two years, but owing to the decreasing hours of darkness, conditions for observing the displays will not be favourable until next autumn or winter, when it is to be expected many displays may be seen.

The Development Commission

THE twenty-sixth report* of the Development Commissioners, covering the year ended March 31, 1936, reviews the expenditure from the Development Fund on agricultural and rural economy, fisheries, the construction and improvement of harbours and on the acquisition of land for road improvements. Advances recommended from the Fund amounted to £555,201 on agricultural and rural industries and £85,925 on fisheries as against £402,859 and £88,109, respectively, in 1934–35. For the maintenance of agricultural research, advisory services for farmers, experiments on field crops and live-stock and the provision of buildings and equipment £421,762 was advanced as against £361,691 in 1934–35. Of this, £285,984 was advanced to the Ministry of Agriculture and Fisheries, £67,101 to the Department of Agriculture of Scotland and £16,982 to the Agricultural Research Council, in addition to £43,000 to the latter Council for capital expenditure.

* Development Commission. Twenty-sixth Report of the Development Commissioners, being for the Year ended the 31st March 1936. Pp. 184. (London: H.M. Stationery Office, 1937.) 3s. net.

The advances to the two Agricultural Departments include £198,170 for maintenance grants to Research Institutes in England and Wales and £40,966 for those in Scotland. The total provision recommended during the year for research and advisory activities in agriculture in Great Britain amounted to £369,977, a generous figure in comparison with State assistance to other industries, although even at this figure research expenditure only amounts to about 0.14 per cent of the value of the year's output.

For the first time since 1931 a considerable sum was approved for the erection of new buildings at institutions engaged in research or agricultural education. Grants have been approved for this purpose to the Studley College for Women, the Royal Agricultural College, Cirencester, the University College of North Wales, Bangor, the Midland Agricultural College, the Avoncroft Agricultural College, and the Royal (Dick) Veterinary College, Edinburgh. Assistance given to rural industries has three principal aims: the provision of technical advice for craftsmen by the Rural Industries Bureaux; the interest of

local residents, usually members of Rural Community Councils, in the welfare of village craftsmen; and the employment by Rural Community Councils of a Rural Industries Organizer. Details of the work of the Rural Community Councils and of the Rural Industries Bureaux are included in the report.

Although the Commissioners are not directly concerned with the provision of work for the unemployed, assistance has been given to two admirable schemes relating to land cultivation—the Allotment Scheme of the Society of Friends and Central Allotments Committee and the Land Settlement Association. Stress is laid upon the experimental character of these schemes for converting the unemployed industrial worker into an independent landholder and on the need for organization in this field if our natural resources are to be used to full advantage. Assistance has also been given to the Agricultural Camps Committee.

While the agricultural section of the report is concerned only with administrative matters, the section on fisheries includes an account of work reviewed by the Commissioners' advisory committee on fishery research as well as progress reports submitted by the directors of institutions receiving grants in aid of fishery investigations. The difficult situation at Armstrong College, Newcastle-upon-Tyne and the Dove Marine Laboratory, Cullercoats, since the financial emergency of 1931, due to the fact that the staff were partly engaged in 'directed' research on the local herring fishery and on pollution in the Tyne for the Ministry of Agriculture and Fisheries, for which the Minister's vote was drastically reduced, has been met by initiating a new grant period of five years in the form of a single block grant towards the total maintenance expenses of the Laboratory. Tribute is paid to Prof. Hobson's determination and ability in overcoming the difficulties and re-organizing research and to the value of the Laboratory in supplementing the fishery researches of the Ministry. Continued support of Prof. A. C. Hardy's investigations at University College, Hull, on the influence of plankton on fisheries is recommended; and reference is made to the development at Conway through investigations on shellfish of a cleansing process for mussels which eliminates the danger of carrying typhoid, and this process has been adapted to the

purification of oysters. Other investigations in this field are concerned with the reliability of bacteriological methods for the routine testing of shellfish for sale, and grants have also been given for the development of freshwater fisheries, including investigations of salmon and sea-trout.

Grants for fishery research are made from the Development Fund either to the Fishery Department for 'directed' researches on problems immediately affecting the economic development and exploitation of fisheries, or to universities, colleges and marine laboratories for 'free' research, with the object of increasing our knowledge of the animal and plant life of the sea in relation to its whole environment. In the first category fall the important investigations on the difficult problems connected with herring fisheries, which differ for England and for Scotland. In Scottish waters the Fishery Board's investigations have shown that the shoaling of the herring on the drift-net grounds in early summer is associated with the search by groups of fish from different sources and of different types for the rich food-plankton then present in northern waters. In the great autumn fishery off Yarmouth and Lowestoft, however, the fish are on a migration preliminary to spawning and the shoals are not feeding. The investigations of the English Fishery Department have led to the issue of much more accurate forecasts of this autumn fishery. Other directed investigations have been concerned with inshore fisheries such as the population of small plaice in sand bays on the east coast of Scotland with a view to determining how far the stock needs protection by regulation of fishing. Diseases of freshwater fish, such as furunculosis, have also been studied, while among the 'free' researches assisted may be mentioned Dr. H. B. Moore's investigations on animal and plant life of the sea-shore, the cause of the dying out of eel-grass or grass-wrack and on artificial hatching and stocking of salmon fisheries.

Enough has been said, however, to indicate the wide range and importance of the Development Commissioners' contribution to scientific research. Equally it would seem that the Development Fund contains possibilities of co-ordinating the national effort in research, which might well be applied in very much wider fields.

The Chemist in Industry

THE Society of Chemical Industry concerns itself very largely with the practical application of chemistry, and in the main operates through its subsidiary groups, of which there are four, and its numerous sections in Great Britain, in the Dominions and in the United States. Once a year, at the annual general meeting, the Society as a whole meets at the headquarters of one of the sections and like the British Association it visits the Dominions and the United States from time to time. This year the annual meeting will be held at Harrogate, though Leeds is the headquarters of the Yorkshire Section, and next year the meeting will be in Canada. At these meetings the business of the Society is dealt with, addresses are delivered, a few papers are read,

works and places of interest are visited, but the social atmosphere predominates.

About a year ago, however, the Council came to the conclusion that some matters of general interest to chemists and the chemical industry as a whole could only be dealt with at conferences specially convened, and accordingly it appointed a strong committee with Dr. Wm. Cullen as convener to give effect to its decisions. The Manchester Section was anxious that the first conference should be held there, and no more appropriate place could have been chosen.

As the subject chosen for the symposium held on April 2, namely, "The Chemist in Industry", was somewhat wide, and indeed vague, it was decided