Notes and News

OCEANOGRAPHY COMMITTEE OF THE CENTRAL BOARD OF GEOPHYSICS

The third meeting of the Oceanography Committee of the Central Board of Geophysics was held on 18 June 1960 at New Delhi. Dr. S. Mull, Deputy Director General of Observatories attended this meeting on behalf of the India Meteorological Department. Among other things the meeting discussed proposals for research vessels for oceanographic work for Andhra University and Central Board of Geophysics, proposed expedition of the Scripps Institute of Oceanography in the Indian and Pacific Oceans, and participation of Indian Scientists in the Indian Ocean Expedition. Matters relating to the Oceanographic Research Wing of the Central Board of Geophysics, were also discussed.

EXPERIMENTS ON ARTIFICIAL SEEDING OF CLOUDS BY THE CSIR AND THE MESO-SCALE STUDY OF THUNDERSTORMS BY THE INDIA METEOROLOGICAL DEPARTMENT

The Cloud and Rain Physics Research Unit of the Council of Scientific and Industrial Research (C.S.I.R.) has set up two additional Cloud Seeding Centres at Agra and Jaipur during the current monsoon season. In this connection 16 additional raingauge stations around Agra and 18 around Jaipur have been set up within a radius of 20 to 30 miles around these centres. The India Meteorological Department is actively assisting the C.S.I.R. in this scheme by supplying daily meteorological information in respect of these areas and installing and maintaining the new raingauge stations. Along with the above project, the India Meteorological Department is also conducting a meso-scale study of thunderstorms around Agra. A network of 9 meteorological observatories equipped with a complete set of self-recording instruments has been set up. Each observatory will record full surface observations daily at four synoptic hours, *i.e.*, 03, 06, 09 and 12 GMT and also keep a continuous watch on the development of large cumulus and cumulonimbus clouds and the movement of thunderstorms. It is hoped that the data collected by these observatories together with the data of raingauge stations including those set up by the C.S.I.R. and the radar pictures of the thunderstorm cells as observed on the weather radars at New Delhi will be of help in the meso-scale studies of thunderstorms occurring in this area.

THE INDIAN METEOROLOGICAL SOCIETY

Under the auspices of the Indian Meteorological Society, Mr. C. S. Ramage, Professor of Meteorology of the Hawaii Institute of Geophysics gave a talk on the 'Forecast problems of the Tropics' on 23 July 1960. Mr. Ramage gave an account of the work being done in the Hawaii Institute of Geophysics on the various problems of Tropical Meteorology, particularly on the use of climatology and persistence in the forecasting of upper winds. He also showed some very interesting photographs of the earth's cloud cover as relayed to the principal ground station at Kaena Point, Oahu, Hawaii by the American experimental weather satellite 'TIROS' which was launched on 1 April 1960. One of the sets of pictures he showed had been taken by the satellite as it passed over East Africa, the West Arabian Sea and West Pakistan and showed clearly the geographical features and the cloud cover over this region.

SYMPOSIUM ON MONSOON METEOROLOGY

A symposium on 'Monsoon Meteorology' will be held from 21 October to 2 November 1961 at the University of Hawaii in connection with the Tenth Pacific Science Congress. The tentative programme of the Symposium covers the following topics—(*a*) The part played by the monsoon in the General Circulation, (*b*) The synoptic scale perturbation of the monsoon, (*c*) The meso-scale perturbations (including convection) and (*d*) Seasonal variations.

SYMPOSIA ON UPPER ATMOSPHERE AND IGY DATA

Two symposia, one on 'Upper Atmosphere' sponsored by the Radio Research Committee of the Council of Scientific and Industrial Research, New Delhi and another on 'IGY Data' sponsored by the Indian National Committee for the IGY will be held in December 1960 at New Delhi. Provisional dates for these symposia which are to run consecutively are 19 to 21 December 1960.

The topics for the symposium on 'Upper Atmosphere' will include Ionosphere, Aurora and Airglow and those aspects of Solar Activity, Geomagnetism and Cosmic Rays which have a bearing on upper atmosphere.

The symposium on 'IGY data' will include IGY disciplines not included in the 'Upper Atmosphere' symposium, such as Meteorology, Geomagnetism, Latitudes and Longitudes, Glaciology, Oceanography, Seismology, Nuclear Radiation, Satellites, and certain aspects of Cosmic Rays and Solar Activity not included in the RRC symposium.

SYMPOSIUM ON PHYSICS OF CLOUD AND RAIN IN THE TROPICS

Under the joint auspices of the Council of Scientific and Industrial Research, the India Meteorological Department, the Indian Air Force (Met. Branch) and the Indian Meteorological Society, a symposium on 'Physics of Cloud and Rain in the Tropics' will be held at the Meteorological Office, Poona from 29 October to 1 November 1960. The topics of the symposium include the following—

(1) Atmospheric neuclei (condensation and freezing)—their origin and distribution—influence on microstructure of clouds and raindrop size spectrum; Atmospheric Chemistry and Chemical Composition of rain water.

(2) Cloud types in different geographical regions—their liability to rain development and associated precipitation features including climatological studies.

(3) Dynamics of cumuliform clouds, thunderstorms and hailstorms.

(4) Radar studies of cloud and rain.

(5) Atmospheric Electricity in relation to cloud and precipitation—Radioactivity of rainwater.

(6) Cloud modifications studies.

SYMPOSIUM UNDER THE AUSPICES OF THE INDIAN NAVAL PHYSICAL LABORATORY, COCHIN

At the fourth Open House of the Indian Naval Physical Laboratory, Cochin, likely to be held from 27 to 29 October 1960, it is proposed to hold a three-day symposium on (a) Physical Oceanography (including microseisms), (b) Under-water Acoustics and (*c*) Naval Electronics.

NORTHWEST RIVERS COMMISSION

The eighth meeting of the Northwest Rivers Commission held at Chandigarh on 12 May

1960 was atttended by Shri P. R. Krishna Rao, Director General of Observatories.

The meeting recommended that the programme of inspection of State raingauge stations, started by the India Meteorological Department from 1 October 1959, should be accelerated so as to cover one third of the raingauges every year instead of one fifth according to the present scheme.

AGRONOMY COMMITTEE OF THE INDIAN COUNCIL OF AGRICULTURAL RESEARCH

The meetings of the Agronomy Committee of the Indian Council of Agricultural Research were held at New Delhi on 21 and 22 April 1960. Shri P. S. Harihara Ayyar, Meteorologist, who attended the above meetings presented the Annual Report of the Director, Agricultural Meteorology on 'Agricultural Meteorology for the year 1958-59'. After some discussions, the Committee passed the following Resolution—

> "The Committee desired that the results from the crop-weather co-ordination studies should be analysed as early as possible. Such a study would be helpful in delineating agro-climatic regions. The Committee further desired that the number of these stations should be increased particularly in the States of Bihar and Rajasthan, where existing arrangements seem to be inadequate. This work should form a part of the programme of the Agricultural Meteorological Division of the India Meteorological Department on a permanent basis".

> "The Committee noted that the experimental techniques are being evolved and this work needs to be continued on a long-term basis".

Among the several other items discussed at the Conference were weed control, green manure, pasture grasses and legumes and fodder research schemes.

AGRICULTURAL RESEARCH SUB-COMMITTEE OF THE INDIAN CENTRAL SUGARCANE COMMITTEE

The 29th meeting of the Agricultural Research Sub-Committee of the Indian Central Sugarcane Committee was held at New Delhi on 28 and 29 April 1960. Shri P. S. Harihara Ayyar, Meteorologist, attended the meeting. Among the various items discussed at the meeting was the Annual Report of the Director of Agricultural Meteorology on the 'Co-ordinated Crop-Weather Scheme—Sugarcane, for the year 1958-59'. The Committee considered and adopted the Report. The Annual Progress Reports of the Sugarcane Development Schemes of various States in India and various other research and development schemes were also discussed at the meeting.

CROPS AND SOILS WING OF THE BOARD OF AGRICULTURE AND ANIMAL HUSBANDRY IN INDIA

The thirteenth meeting of the Crops and Soils Wing of the Board of Agriculture and Animal Husbandry in India was held at Ranchi from 7 to 11 June 1960. Shri A. K. Mallik, Director, Agricultural Meteorology, who is a member of the above Committee represented the India Meteorological Department at this meeting. The subjects discussed covered mainly various aspects of agriculture in India. A note entitled "Evapotranspiration as a factor in irrigation planning" was presented by Shri Mallik before the Committee, appointed to consider "Irrigation and soil survey for the areas newly coming under the command of irrigation projects and evolution of suitable cropping pattern for such areas". Shri Mallik explained the benefits to be derived from the conducting

of planned experiments for the determination of water requirements of crops from crop fields on a region-wise, soil-wise and crop-wise basis. Many important and far-reaching recommendations having a bearing on important agricultural problems of India were made. One of the recommendations of special interest for agricultural meteorology was to the effect that agro-irrigation research stations should be set up in each of the major irrigation project areas to determine water requirements of crops and to evolve suitable crop patterns.

NEW OFFICE BUILDING OF THE REGIONAL METEOROLOGICAL CENTRE, MADRAS

Dr. P. Subbarayan, Union Minister for Transport and Communications declared open the new building of the Regional Meteorological Centre in College Road, Madras, on the evening of 18 June 1960 in the presence of a large and distinguished gathering. The new building stands on the same site where the Madras Observatory—the oldest observatory in India—was located over 150 years ago.

Shri P. R. Krishna Rao, Director General of Observatories, offered to the Minister the sincere condolences of the department on the bereavement he had recently suffered by the death of his distinguished wife. In his speech of welcome, the D.G.O. traced the history of the Madras Observatory, referred to the varied services rendered by the department and mentioned about the proposal to establish an Institute of Tropical Meteorology as part of the scheme of expansion of scientific research in India under the Third Plan. Addressing the gathering Shri D.C. Das, Joint Secretary, Union Ministry of Transport and Communications observed that Indian meteorologists were respected all over the world and that India is sparing officers to many countries in the world for setting up their meteorological services.

Dr. Subbarayan at the outset acknowledged the message of sympathy conveyed to him by the Director General of Observatories on behalf of the department on his recent bereavement. After referring to his visits to the old Madras Observatory building on this very site and the occasions he used to look at the moon and the stars through the telescope stationed there, he asked the Director General of Observatories to consider putting up a reasonably good telescope on this site so that those who were interested in peering at the stars and planets might have an opportunity to do so. After referring to the growth of the Meteorological Department, and the increasing demands necessiated by the expansion of aviation, the Minister said that he was interested to know from the Director General of Observatories that a separate non-aviation forecast centre would be established at the premises of the Regional Centre in the city. While welcoming the proposal to encourage and co-ordinate research he hoped that the Madras Regional Centre would make a special study of the "Easterly Jet Streams", and also do research work in problems of tropical meteorology with special reference to the weather phenomena affecting this region. He also expressed the hope that it may be possible to establish a forecast centre at Trivandrum under the Third Plan.

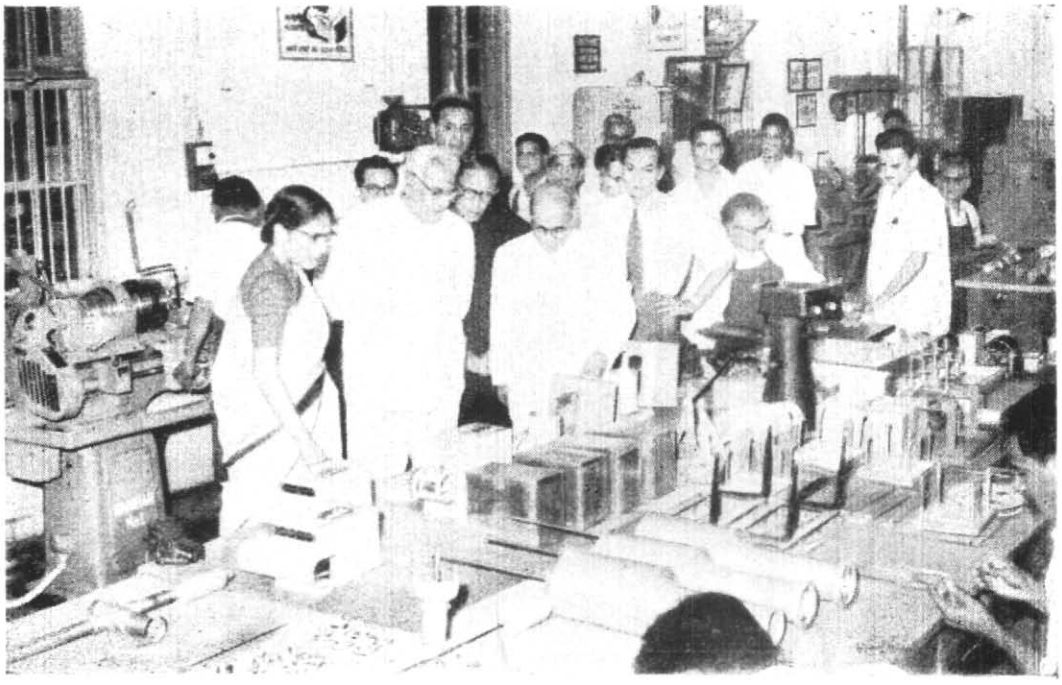
Declaring the new building open, he said that he was dedicating it to the service of meteorology in this region and believed that it would be of great benefit to the people of the region.

Shri Y. P. Rao, Director, proposed a vote of thanks.

The department brought out an instructive and attractive souvenir to mark the occasion.

OPENING CEREMONY OF THE NEW OFFICE BUILDING OF THE REGIONAL METEOROLOGICAL CENTRE, MADRAS

VISIT OF THE MINISTER FOR TRANSPORT AND COMMUNICATIONS TO THE METEOROLOGICAL OFFICES AT COLABA AND POONA



VISIT OF THE MINISTER FOR TRANSPORT AND COMMUNICATIONS TO METEOROLOGICAL OFFICES AT COLABA (BOMBAY) AND POONA

Dr. P. Subbarayan, Minister for Transport and Communications, Government of India, visited the Colaba Observatory, the Meteorological Communication Centre and the Regional Meteorological Centre at Colaba (Bombay) on 24 June and the Meteorological Office at Poona on 27 June 1960. The Minister was taken around during his visits by Shri P. R. Krishna Rao, Director General of Observatories.

Dr. P. R. Pisharoty, Director of the Colaba Observatory, outlined the history of the Observatory from 1823 and explained with the help of instruments, models and charts the work carried out at Alibag and Colaba Observatories in the fields of geomagnetism, seismology, atmospheric electricity and time service.

The working of the Meteorological Communication Centre, where more than dozen teleprinters, busy round the clock, exchanged the meteorological data between the different meteorological offices in India was explained by Shri J. M. Korkhao. Shri K. N. Rao, Director, Regional Meteorological Centre, explained in detail with the help of numerous exhibits, the considerable variability in the date of onset of the southwest monsoon, the variability of rainfall over the country, the storm warning service to shipping interests, the weather warning service for Community Projects and the public in general. The Minister evinced considerable interest in the effect of geomagnetic storms on telecommunications and in the exhibits regarding the monsoons and the weather services to farmers.

At the Meteorological Office, Poona the Minister was shown the various activities of that office pertaining to forecasting, climatology, agricultural meteorology and instrumentation including testing laboratories and the workshop. The Minister evinced keen interest in the work of the Meteorological Office at Poona. Addressing the members of the staff, Dr. Subbarayan made a special mention of the services to agriculture being rendered by the India Meteorological Department, thereby helping in more food production in India. He expressed appreciation of the efforts being made to manufacture all types of meteorological instruments departmentally, thus helping in the conservation of foreign exchange reserves of the country.

ASSIGNMENTS OF INDIAN METEOROLOGISTS ABROAD

Dr. L. S. Mathur, Deputy Director General of Observatories and Shri M. R. Das Gupta, Assistant Meteorologist were deputed to the Government of Sudan as Opex Electronics Expert and Assistant Electronics Officer respectively under the United Nations Technical Assistance Board for a period of one year. Dr. Mathur and Shri Das Gupta proceeded to Khartoum on 29 May 1960.

Another Indian Meteorologist, Shri K. Parthasarathy, was appointed as Senior Technical Officer (P-4) in the Technical Assistance Unit of the World Meteorological Organisation's Secretariat at Geneva for a period of ten months. Shri Parthasarathy left this country on 1 July 1960 to take up his new post.

We wish them all success in their new assignments.

INAUGURATION OF NEW SOLAR INSTALLATIONS AT THE ASTROPHYSICAL OBSERVATORY, KODAIKANAL

Dr. P. Subbarayan, Union Minister for Transport and Communications inaugurated three new solar installations, *viz.*, Solar Telescope, Lyot Coronagraph and Monochromatic Heliograph, at a formal function at the Astrophysical Observatory, Kodaikanal, on 14 August 1960. Shri D. C. Das, Joint Secretary, Ministry of Transport and Communications was also present on the occasion. Welcoming the assembled guests, Shri P. R. Krishna Rao, Director General of Observatories said that the Solar Physics Division of the Observatory was the oldest, biggest and the most highly developed. He added that the addition of the new instruments, which were being inaugurated by the Minister, constituted a distinct step in the modernisation of the Astrophysical Observatory and they looked forward to a period of active research work in Solar Physics with these instruments. He paid a tribute to Dr. A. K. Das, former Director of the Observatory who had played a notable part in the modernisation of the equipment of the Observatory in the last 14 years. He hoped that under direction of the present Director, Dr. Vainu Bappu, who has already made a name in Astrophysics, the Observatory will make important contributions to the subject. The Director General stated that the developments in the Observatory in the Third Five Year Plan will relate mainly to Stellar Physics and Radio-astronomy and to the improvement of the optical and general workshops.

Shri D. C. Das, Joint Secretary, briefly outlined the development that have taken place in the Second Five Year Plan in the India Meteorological Department of which the Kodaikanal Observatory forms a part. Inaugurating the new instruments, Dr. P. Subbarayan said that though India had made much progress in the field of meteorology, yet owing to the difficult foreign exchange situation it had not been possible to expand the meteorological and other services as much as desired. However, with the internal resources increasing, he said that Government would do its best to promote meteorological research and help expand astrophysical activities.

A souvenir pamphlet entiled "Modernisation of the Astrophysical Observatory, Kodaikanal" was issued on this occasion.

SEAQUAKE

Vessel : CWWS *Karsik*

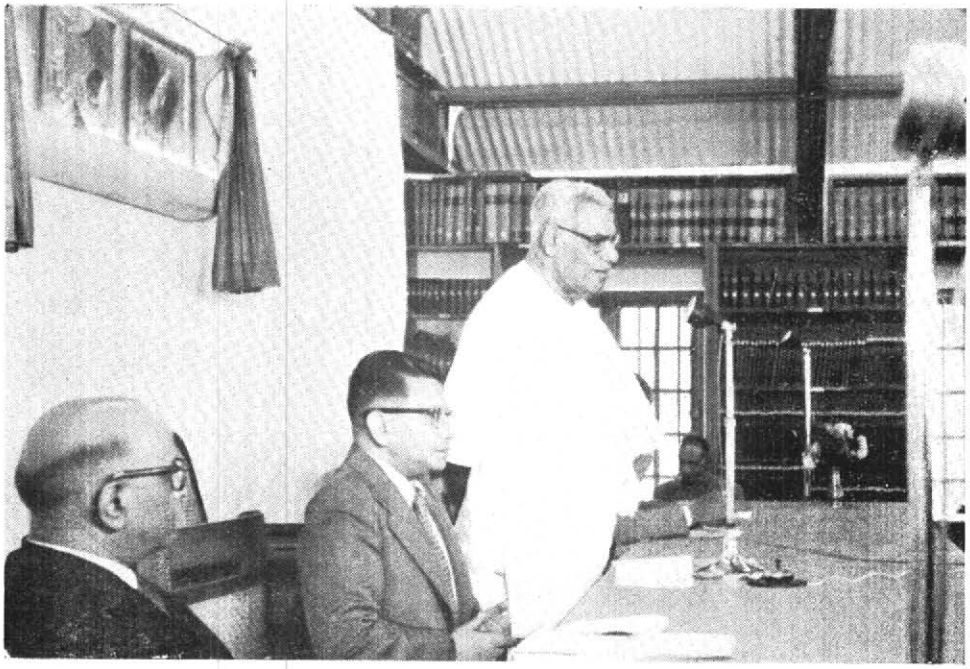
16 June 1960, 1900 GMT. Position of the Ship: Lat. 2° 12'·5 S, Long. 68° 27'·0 E.

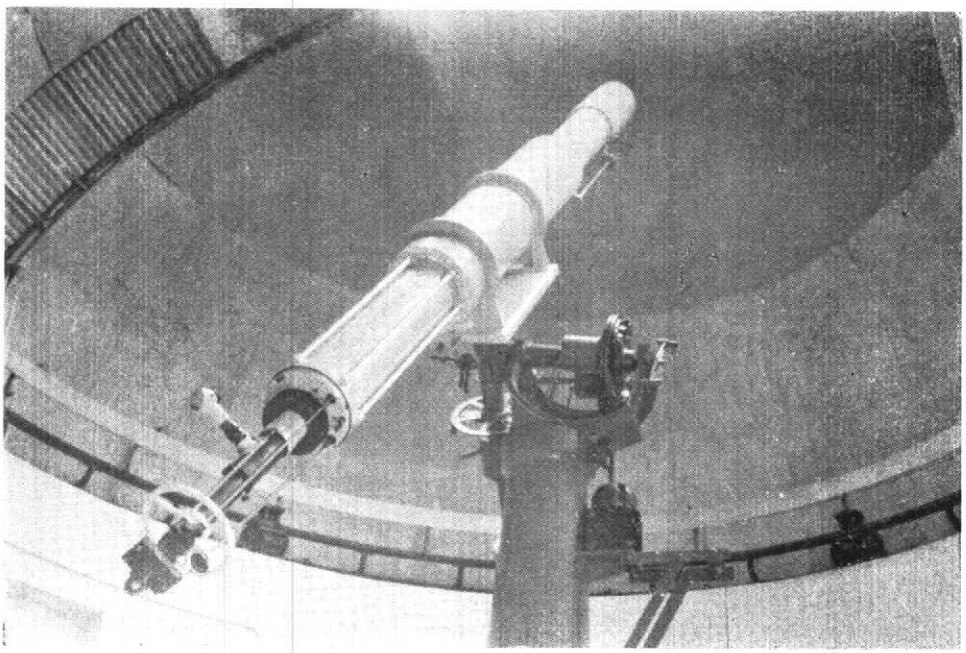
Karsik felt seaquake duration 3 seconds, Intensity II to III M.M. Scale. Vibration started midship to ast. Sea smooth, south-easterly swell. At 2005 GMT in position 2° 3'·0 S and 68° 41'·0 E another seaquake duration 2 sec of intensity I M.M. scale. Vibration started midship to ast.

True course of ship 057°. At 1915 GMT very slight vibration through ship.

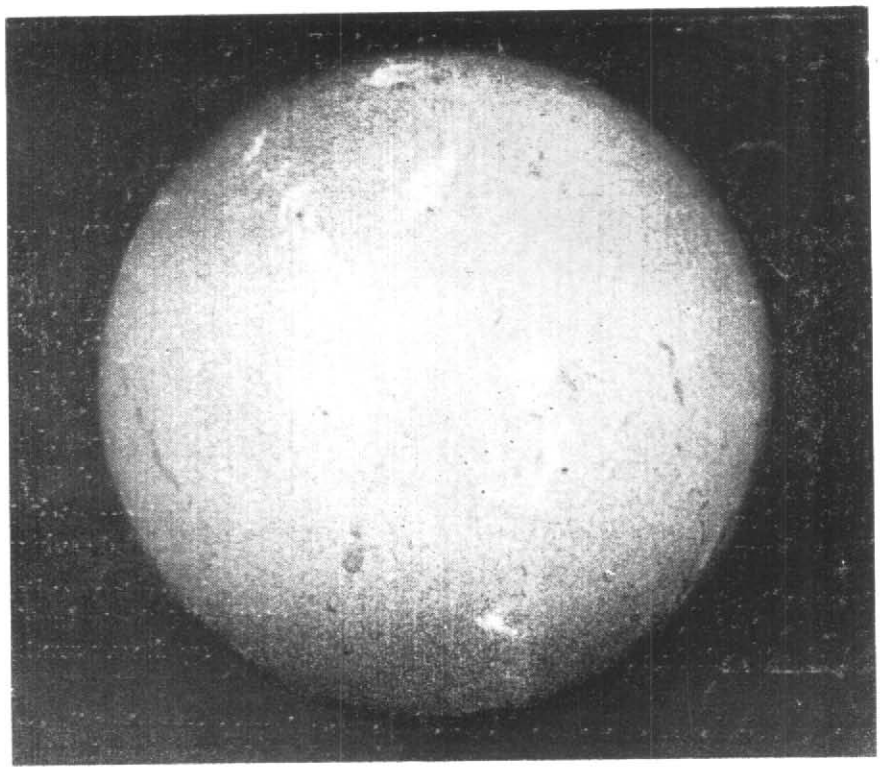
The above reported seaquakes were not well recorded by the seismographs of Indian Observatories because of their very small magnitude. The tremors however appear to be after-shocks of another seaquake which originated at $10^h\ 20^m\ 02^s$ GMT of 16 June 1960 near 2·5° S and 69°E. This shock was recorded by most of the Indian Observatories—*Editor.*

INAUGURATION OF NEW SOLAR INSTALLATIONS AT KODAIKANAL

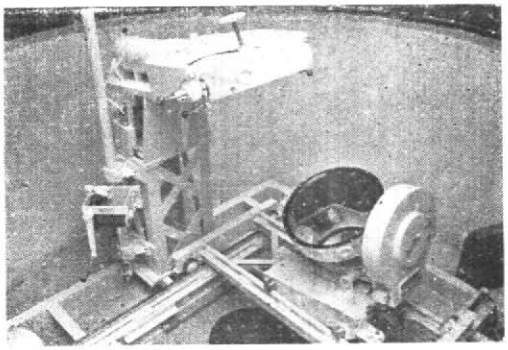




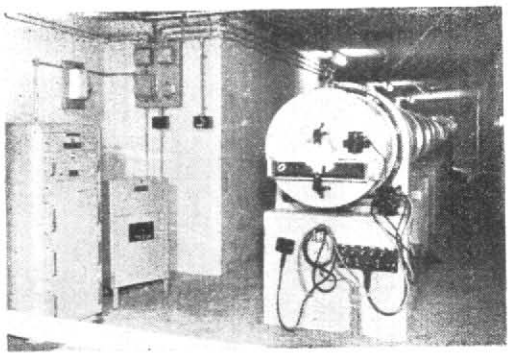
The 8-inch Lyot Coronagraph of the Kodaikanal Observatory



A solar flare of importance 3, taken in H-alpha light with the Monochromatic Heliograph at Kodaikanal at 1110 IST on 14 August 1960; there was a radio fade-out which lasted an hour and six minutes followed by a severe magnetic storm fiftyseven hours later



The primary and secondary mirrors of the coelostat for feeding sunlight to the 15-inch aperture solar telescope



The slit end of the 60-foot spectrograph housed in an underground tunnel

SEVERE THUNDERSQUALL AT DUM DUM AIRPORT

A severe thundersquall struck Dum Dum Airport (Calcutta) and its environs at 0305 IST on 14 June 1960. It was accompanied by a heavy shower and lasted for about 25 minutes. The squall commenced with a speed of 60 kt from SSW. The peak wind speed of 147 km hr^{-1} from the same direction was registered at 0310 IST. This surpassed the highest wind on record at Calcutta since 1948, *viz.*, 145 km hr^{-1} from NW in May 1953. The highest wind on record at Dum Dum for the month of June is 115 km hr^{-1} from NW in 1953.

The squall and its effects were confined to a very small area of about 2 miles radius, around the airfield.The anemograph at the Alipore Observatory, about 12 miles south of Dum Dum, did not disclose any rise in the wind speed, although there was a shift in the wind direction. The autographic charts at Dum Dum showed a sharp fall in atmospheric pressure of 3·5 mb and a fall of temperature of 8° C, in association with the squall. There were no significant changes of these elements at Alipore. A fall of 7 mm of rain was recorded at Dum Dum during the period 0245 to 0300 IST followed by a further fall of about 2·5 mm during 0315 to 0330 IST. No rainfall was, however, recorded at the Alipore Observatory. As a result of the squall, nineteen parked and moored aircraft sustained disabling damage. There was also damage to some structures at the aerodrome, such as blowing-off of tiles or roofs and breakage of glass-panes. A few trees were also uprooted and several mud-houses collapsed in the affected area.

The monsoon was active over Assam and adjoining East Pakistan on 12 and 13 June and weak over the Gangetic West Bengal, with the trough line at 1 km close to the foot of the Himalayas.