Reviews

I

_Nordlichebeobachtungen in Ungarn (1523-1960)_ by Dr. A. Röthly and Dr. Z. Berkes, Akadémiai Kiadó, Verlag der Ungarischen Akademie der Wissenschaften, Budapest 1963, 189 pages, 11 diagrams.

For a place where auroral manifestations are not very frequent, the authors have taken considerable pains in collecting all records of the aurora observed in Hungary from 1523 to 1960, and presenting the material in the form of a useful catalogue, analysis and appendix. Our knowledge of the aurora is fairly exhaustive, by now, but it is of interest to know how the aurora behaves in a low latitude like that of Hungary. The analysis has been presented in a number of representative diagrams, bringing out the various characteristics of auroral variations, _viz._, latitudinal, diurnal, monthly, annual and secular variations. The association with sunspot activity and phases of the moon is also of interest. The illustrations are particularly attractive. On the whole the book makes interesting reading.

P. K. SEN GUPTA

II


This volume is a testimony to the encouraging response from the workers in India in the utilization of IGY data. A variety of disciplines like Meteorology, Geomagnetism, Airglow, Cosmic rays, Oceanography, Outer space, Seismology and Nuclear radiation have been covered in the book, each of which has been well represented by a number of papers by specialists in the field.

In the opening paper, M.S. Krishnan has brought out how the work during the IGY has enabled us to gain further knowledge about the surface and interior of the earth.

There are five papers and four abstracts in Meteorology. In the first paper, P.S. Pant has discussed the upper tropospheric circulation in India on the basis of meridional sections along 80°E, with special reference to the onset and withdrawal of strong westerly and easterly winds of jet magnitude. In the next paper on the onset of monsoon in India, P. S. Pant and A.D. Vernekar have come to the conclusion that the setting in of steady westerlies characterise the onset of monsoon and not a significant change in the temperature and humidity of the air mass.

In a paper entitled "M-type thermistor as radiometer", B. Padmanabhamurty and V. P. Subrahmanyanam, give a study of the use of this instrument.

Anna Mani and Oommen Chacko have presented an analysis of the observations of nocturnal radiation at Poona and Delhi, as regards seasonal variations and dependence on the
temperature and water vapour content of the lower layers of the atmosphere. The next paper on "Measurements of diffuse solar (sky) radiation at Delhi and Poona", the same authors have summarised results of measurements made during 1959.

There are five papers and two abstracts in Geomagnetism. The papers in this section are summarised versions and a few of these are expected to be published elsewhere. In the paper on "SFE and $S_2$ vectors at Indian Geomagnetic Stations", P.R. Pisharoty and P. V. Joseph have shown the similarity of diurnal variation of $H$ and $S_2$ ($H$) associated with optical solar flares of importance 3+ and 3, but having a phase of difference of about one hour. A tentative SFE current system has also been indicated.

In a note on "An estimate of geomagnetic manifestation of solar activity", A. Yacob has shown that while passing from sunspot minimum to sunspot maximum of the solar radiation, the geomagnetic effect of the wave radiation is enhanced by 124 per cent but the corpuscular effect is enhanced only by 43 per cent.

There are three papers and one abstract on Airglow and one paper on Ozone. In the paper on Study of night airglow at Mt. Abu: 01 5577 A, B. S. Dandekar has given an account of the instrumentation used and discussed the diurnal and seasonal variations of the intensity of airglow. He found that the intensity of 01 5577 Å line increased on the night following flares. B.S. Dandekar has also studied the behaviour of 01 6300 Å in the night airglow at Mt. Abu. He observed an increase in the intensity of this line with the critical frequency of the F-layer.

In another paper, P. D. Angreji has analysed the monthly means of nocturnal and seasonal variations of airglow data on 01 5577 Å at Srinagar (1958-60).

The paper on "Atmospheric ozone over Mt. Abu – Ahmedabad and its comparison with that over other stations in India and elsewhere" by G.M. Shah contains a summary of ozone measurements made during 1952-59, confirming the earlier studies on the seasonal, latitudinal, longitudinal, vertical distribution changes.

There are two papers and one abstract on Cosmic Rays. H. Razdan has studied the "Change of strength of the source of daily variation of cosmic rays with solar cycle" and has come to the conclusion that the "strength of source of daily variation decreases with increasing solar activity which is consistent with an origin of anisotropy of primary radiation due to acceleration of the cosmic ray particles in beams of solar plasma with frozen magnetic fields". U. R. Rao has given an account of "Correlated changes of geomagnetism and east-west asymmetry of cosmic rays".

There are five papers and three abstracts under Oceanography. R. S. Chugh has presented two papers, the first on "Latitude variation and earth tide at Dehra Dun", and the second on "The Indian mean sea level". In the latter he has presented the annual and secular variations of the sea level in Indian Water, and discussed the effects of wind and pressure, surface temperature and water density, land uplift and subsidence on these determinations.

In the paper on 'Elasticity of Indian Rocks', M. Hayakawa and S. Balakrishna have given an analysis of measurement of ultrasonic velocity in Indian granites. They have explained why there is considerable scatter in the values and also why Indian granites have higher velocities than granites from other countries like Japan, America and Russia. In the next paper "Study of earth tide at Hyderabad", the same authors have given the results of their analysis of the measurements of earth tide by least square method and Fourier's method.
In the paper on “Palaeomagnetism and the continental drift”, C. Radhakrishnamurty and P. W. Sahasrabudhe have arrived at some tentative conclusions regarding the continental drift of the Indian sub-continent during the last 200 million years. They are of the opinion that the Indian sub-continent occupied a position well south of the equator between Jurassic and Eocene times.

On the “Outer Space”, there is one paper and one abstract. S. N. Ghosh and M. S. Bisht have described a method developed by them for the determination of electron density in the exosphere from whistler data.

Under “Seismology”, A. N. Tandon has given a brief review of the existing ideas about microseisms. He has shown how cyclonic storms of sufficient intensity generate significant microseism but the weaker one, depressions, and storms outside 0—200 m in depth have insignificant effect. He has given suggestions for improving the present day techniques.

The section on “Nuclear Radiation” has one paper and one abstract. The paper is by D. Lal on “Role of Cosmic ray produced isotopes in the study of large scale atmospheric circulation and other geophysical phenomena”.

The book has been attractively produced.

P. K. SEN GUPTA

III


The Carpathian Mountains form the eastern wing of the central mountain axis of Europe; though nearly equal in total length and area, they are not so impressive as the Alps. The middle of the arc of the Carpathian Mountains is marked by a significant decrease in width (from average of 180 to 60 miles) and height and at this point a number of easy passes connect the head waters of Dniester and Tisza. The countries of this region are naturally very much interested in the meteorology of the area for their economy and multifarious other activities. Because weather, as is very well-known, does not obey political boundaries, the people of the neighbouring lands have combined in an united effort to study and solve the meteorological problems, particularly those very characteristic of their region. With this end in view, the largely attended conference on Carpathian Meteorology was held from 13 to 15 November 1961 at Budapest and the publication under review is the report of this conference. It is seen that a continuity is maintained between the conferences in as much as the coverage of the second conference has emerged from the directions contained in the recommendations of the first conference organised mainly by Prof. Konecck of the Slovakian Academy of Sciences and held in Smolenice.

As should be expected, a large number of papers presented at the conference deal with the problems directly connected with the meteorology of mountainous regions mainly of the layers immediately above the ground surface. A few papers chosen at random will illustrate this; for instance, papers of the type “Methods for the investigation of orographically induced weather phenomena in the Carpathian basin”, “Some data concerning the water
balance and the heat balance in the Carpathian basin”, “Influence of vertical velocity due to frictional forces on the distribution of precipitation in space and time over Hungary”, “On the orographical precipitation producing influence of mountainous ranges within the Carpathian basin” or “Investigations on snow conditions and avalanches in the Trata mountains”. These report the careful and detailed studies carried out in certain portions of the Carpathian region, pertaining to temperatures, precipitation, evaporation of water or heat balance etc. In the paper “Problem of the construction of climatic charts in a mountainous country”, difficulties that are encountered in preparation of any climatological chart in such areas have been amply brought out. The method of interpolation and extrapolation so frequently applied to plain areas completely fail here. It has been emphasised that even in the case of constructing charts of reduced m.s.l. temperatures, it is necessary to carefully take into account the peculiar orographical pattern and that a picture given by Isanomals could be rather misleading in the case of more extended areas. It is impossible to determine the dependence on elevation with a sufficiently high degree of accuracy because in anomaly charts, particularly during the winter months, the most conspicuous phenomena of this season, namely, that of the occurrence of the temperature inversions, would be obliterated. It has been suggested in order to eliminate these difficulties: (1) That the number of stations located on slopes and mountain summits should be numerous, (2) That new valley stations should be established in such locations where no side valleys discharge into the main valley. The amount of interest evinced in these problems is clearly shown by the large amount of discussions which followed most of the papers. W. Böer (Potsdam) in the paper “Some basic considerations of synoptic climatology” dealing with the concept of dynamic climatology of Bergeron remarks that in order to obtain objective criteria for the classification of synoptic situations the introduction of parameters for the characterisation of the following factors is very necessary: (1) Advecive, (2) Radiation balance and (3) Degree of development of Vertical Motion. This paper seems to have been most thoroughly discussed and the discussions were initiated by Prof. S. P. Chromow.

However, all the papers were not confined to the surface meteorological studies alone nor entirely confined within the Carpathian region. There were papers dealing with general synoptic situation on continental scale. These have been dealt with in papers of the type “A study of the meteorological situations responsible for the occurrence of more important floods experienced in the river Tisza” and “Errors in the provision of the contour charts of the 500-mb surface for the Carpathian region by graphical barotropic method”. In the case of the latter paper the work on 700-mb level and perhaps the greater importance of the thickness of the 500/1000-mb layer were referred to during the discussions that followed the presentation. At the end of the conference the importance of collaboration of the meteorologists of the Carpathian countries for pursuing uniform standardised procedures in their research connected with the meteorological problem was emphasised by framing certain recommendations. Also these were to be used as the basis of mutual collaboration and for the conduction of the next Carpathian conference.

Such polyglot publications containing portions in no less than four or five different languages, may at first appear a little forbidding to some. However, the opening up of much wider circle of readers more than compensates this shortcoming.

The Report is very well-printed and bound and the authorities concerned are to be congratulated for this.

U. K. BOSE