

Notes and News

THE FORTYFIRST SESSION OF THE INDIAN SCIENCE CONGRESS HELD AT HYDERABAD IN JANUARY 1954

The 41st Session of the Indian Science Congress was inaugurated by the Hon'ble Shri Jawaharlal Nehru, Prime Minister of India at the Osmania University, Hyderabad on 2 January 1954 in the midst of a large number of distinguished scientists from all parts of India and from a number of foreign countries. Dr. Sundarlal Hora, Director, Zoological Survey of India, the General President of the Session delivered the Presidential Address on "Give Scientists a Chance".

S. C. Roy, L. A. Ramdas, A. K. Das, S. P. Venkiteswaran, P. K. Das, P. Jagannathan and A. K. Mukherji from the India Meteorological Department attended the Session. A number of papers were contributed by the officers of the India Meteorological Department. P. K. Das presented a paper on "Researches in Cloud Physics and Rain-making projects in the Tropics" by A. K. Roy and himself in the Physics Section and P. Jagannathan presented a paper on "Climatic Changes in India—II Temperature" by S. K. Pramanik and himself in the Geology and Geography Section.

There were a number of interesting discussions and special lectures of which the following may be mentioned—

- (1) "Mathematics of Time Series" by Prof. Norbert Wiener
- (2) "The Nature of Causality" by Prof. Norbert Wiener
- (3) "The Structure of Universe" by Prof. F. J. M. Stratton
- (4) "Evolution and Modern Thought" by Prof. Julian Huxley

CENTRAL BOARD OF GEOPHYSICS

The Central Board of Geophysics which has been designated by the Government of India as the National Committee in India for the

International Union of Geodesy and Geophysics was reconstituted for a further period of 3 years with effect from 25 January 1954 to 28 February 1957 with the following members—(1) D. N. Wadia, Geological Adviser to the Government of India (*Chairman*), (2) M. B. Ramachandra Rao, Chief Geophysicist, Geological Survey of India (*Secretary*), (3) Chairman, Central Water and Power Commission, New Delhi, (4) Secretary, Central Board of Irrigation and Power, New Delhi, (5) Surveyor General of India or his representative, Dehra Dun, (6) Director General of Observatories, New Delhi, (7) Director, Geological Survey of India, Calcutta, (8) S. N. Bose, Khaira Professor of Physics, University College of Science, Calcutta, (9) K. S. Krishnan, Director, National Physical Laboratory, New Delhi, (10) S. S. Bhatnagar, Director, Scientific and Industrial Research, New Delhi, (11) G. K. Chandiramani, Deputy Educational Advisor (Technical), Ministry of Education, New Delhi, (12) K. R. Ramathan, Director, Physical Research Laboratory, Ahmedabad, (13) S. K. Banerji, 3 Ramani Chatterji Road, Calcutta.

STANDING ADVISORY BOARD FOR ASTRONOMY

The Standing Advisory Board for Astronomy held its 3rd meeting at the Nizamiah Observatory, Hyderabad on 7 and 8 January 1954 under the Chairmanship of S. C. Roy, Director General of Observatories. A. K. Das, Director, Kodaikanal Observatory presented a report on the implementation of the recommendations made at the second meeting of the Board held in September 1951. The objective, equipment and location of the proposed Central Astronomical Observatory for stellar work and A. C. Banerjee's scheme in this regard were discussed at the meeting.

The Board considered the main lines of work which a comprehensive programme of a modern stellar observatory should comprise. It was recommended that a 74" conventional type reflector with a Baker Corrector which

could be used also for astrometric and survey work should be first installed in India. But in the long run when funds are available India should also have a refractor and a Schmidt-Cassegrain for astrometry, survey and other work. The Board discussed the considerations which should guide the selection of a site for the proposed stellar observatory and recommended that visual observations and some photographic observations of "seeing" conditions should be taken in Udaipur and Daulatabad—Aurangabad area for a period of two years with a view to fix the location of the proposed observatory. Advantage was taken of the presence of Prof. F.J.M. Stratton the famous astronomer of England at the Science Congress, Hyderabad to obtain advice regarding the location and equipment of the proposed observatory.

M. L. Chandratreya, a member of the Board reported that the Deccan Education Society had ordered for a planetarium which will be established at Poona.

ROLE OF METEORIC DUST IN CAUSING PRECIPITATION

Dr. E. G. Bowen, Head of the Division of Radiophysics of the Commonwealth Scientific and Industrial Research Organisation, Australia has produced a most remarkable theory that may have high importance for mankind. He appears to have established a close relationship between days of heavy rainfall and showers of meteors through which the earth passes on known and predictable days in the year.

Each year on known days in the months of October, November and December, and in May, June and July, the earth passes through streams of meteors and meteoric dust from outer space. The actual days, which are the same in each year, on which the earth passes through these meteoric streams have been known for many years. Dr. Bowen seems to have established the fact that individual days of very heavy rainfall occur almost simultaneously at many places, particularly in the southern hemisphere. These days of heavy rain appear to occur approximately thirty days after the earth has

passed through a meteoric shower. Dr. Bowen postulates that it takes approximately thirty days for the very fine meteoric dust to percolate down through the atmosphere from outer space to the level at which rain is precipitated from rainclouds. The inference is that it is the meteoric dust in the atmosphere which provides the minute nuclei which trigger off the rainclouds to produce excessive rain.

Dr. Bowen arrived at all this from a number of angles, one of which was the fact that he could find no apparent reason why heavy rainclouds failed to reproduce rain but passed out into the Pacific. On other occasions they dropped their rain freely. Rain research aircraft found the partial answer in the fact that when rainclouds dropped their rain freely the sensitive recording instruments in the aircraft showed the presence of many rain-producing particles in the air.

Dr. Bowen has stressed that these heavy rain days are not found every year in each place. Rain does not fall unless the appropriate atmospheric conditions occur. If suitable clouds are available and rain-forming nuclei are not present in the atmosphere meteoric dust will cause heavy rain. If there are no suitable clouds, notwithstanding the fact that there may be plenty of rain-forming nuclei in the atmosphere, the meteor dust may have no effect.

REPORT OF ABNORMALLY HEAVY TURBULENCE ALONG CALCUTTA-KARACHI ROUTE ON 4 JUNE 1953

A DC-4 (TF-RVH) aircraft belonging to Braathens S.A.F.E. which flew from Calcutta to Karachi in the afternoon of 4 June 1953 experienced abnormally heavy turbulence while flying under fair weather conditions between Lat. 23°N Long. 81°E and Lat. $23\frac{1}{2}^{\circ}\text{N}$ Long. 78°E , i.e., roughly between Jabalpur and Bhopal, near about 10,000 ft above sea level. Extracts from a report on this turbulence by Captain O. Gabrielsen, Commander of the aircraft are reproduced below by the courtesy of Braathens S. A. F. E. Air Transport A/S—

REPORT OF HEAVY TURBULENCE ON 4 JUNE 1953—SAFE 822

" At 0805 GMT, approx. 45 naut. miles east of Jabulpore the aircraft was cruising at 10,500 ft at 165 mph indicated airspeed. Due haze, the horizontal and vertical visibility was reduced to 300—400 yds. Light turbulence, temp. 12°C, wind northerly 25 knots and no clouds. The automatic pilot was disengaged and the Captain was sitting in the left hand seat and the Flight Engineer in the right hand seat, both strapped in.

Suddenly an upward airstream of considerable strength was encountered, the vertical speed indicator showing 5-6000' per minute, and the airspeed increased immediately in excess of 230 mph. When trying to counteract the speed increase through pulling up the nose, the aircraft got into a downdraft which was also extremely strong, though not quite as strong as the upward one.

As everything happened in such a short time with practically no interval between the upward and the downward draft, the aircraft practically stalled, and the nose dropped, as the speed was reduced down to normal when the aircraft was hit by the downward draft. This stalling resulted in a negative G, whereby the passengers, who were not strapped in, "left" their chairs and hit the ceiling. (The "Fasten seatbelt" sign was not on when the turbulence was hit, as it had not been deemed necessary).

After the nose dropped the aircraft was diving at an angle of approx. 45°, and the speed picking up rapidly to 250 mph, as the Captain did not dare to pull out too hard. When the aircraft was level, the height was 10,000 ft. At this time there was no turbulence, no haze and very good visibility, and the aircraft now descended to 8,500 ft where the temperature was 23°C.

Fortunately none of the crew or the passengers were hurt, but everything loose in the pantry was smashed. The airplane, however, seemed to have got no damage and be operating normally.

If the Flight Engineer and the Captain had not been strapped in, there was a great possibility that the result could have been a fatal accident.

Sd/- O. Gabrielsen
Captain"

On the sea-level charts for 0600 and 1200 GMT on this day, there was the usual heat low over East Madhya Pradesh to the east of the region where the turbulence developed. Skies were clear or covered with small amounts of fair weather cumulus between Umaria and Bhopal. There was no thunderstorm or even cumulonimbus clouds anywhere over the central parts of the country either during the period of the flight of the aircraft or during the subsequent 24 hours. The upper wind charts for 0900 GMT showed an elongated *high* between 3000 and 12,000 ft a. s. l. between latitude 15°N and 25°N, i.e., in the region where the turbulence developed. A feeble western disturbance was moving across Afghanistan but the trough line associated with it was running in the upper air along 70°E, much to west of the area of reported turbulence. The vertical wind shear in the region of the turbulence was not particularly abnormal as can be seen from the actual pilot-balloon winds at Jabalpur, Bhopal and Nagpur at 0900 GMT on this day (Table 1 below).

The radiosonde data for Nagpur were not available for 3 and 4 June 1953 but those for Jodhpur, Allahabad and Veraval do not suggest any abnormal lapse-rates over the Jabalpur-Bhopal region.

TABLE 1

Altitude (ft)	Pilot-balloon winds at					
	Jabalpur		Bhopal		Nagpur	
	Direction (°)	Speed (Knots)	Direction (°)	Speed (Knots)	Direction (°)	Speed (Knots)
2000	320	06	300	07	040	11
5000	320	15	310	14	330	13
10,000	330	17	320	15	330	11
15,000	(0200 GMT) 320	10	350	13
			(0200 GMT)			

COLD WAVE IN WESTERN INDIA DURING JANUARY 1954

In the rear of a western disturbance which moved northeastwards across the Punjab on 7 and 8 January 1954, cold air spread over Kutch, Saurashtra and Gujarat on the 9th and 10th, when these areas experienced a cold wave which was severe at some places. The minimum temperature dropped by $6-12^{\circ}\text{F}$ on the 9th and further by $6-15^{\circ}\text{F}$ on the 10th. The total fall in temperature during the two days was of the order of $15-20^{\circ}\text{F}$ at almost all the places in these areas, the departure from the normal being as much as $9-15^{\circ}\text{F}$ on the 10th. The lowest temperature (37°F) was recorded at Deesa on the 10th when Ahmedabad recorded 38°F . Inci-

dentally, the previous record for lowest temperature at Ahmedabad in January (39°F in 1905) was lowered this time. The night temperature began rising from 11th onwards.

Bombay City and suburbs were also affected by the cold wave, the temperature having dropped by $12-15^{\circ}\text{F}$ during the two day interval 8-10th. Chilly winds blowing on these days kept most of the people indoors, the roads and promenades presenting a deserted appearance.

Maps showing the minimum temperatures and departures on the 10th and change from 8 to 10 January 1954 are given in Figs. 1 and 2.

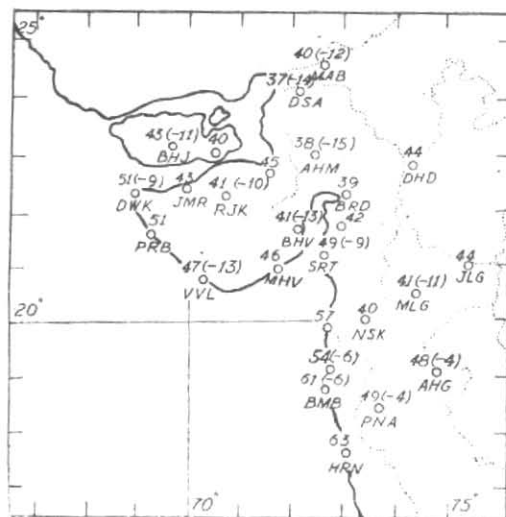


Fig. 1. Minimum temperatures and departures from normal on 10 January 1954

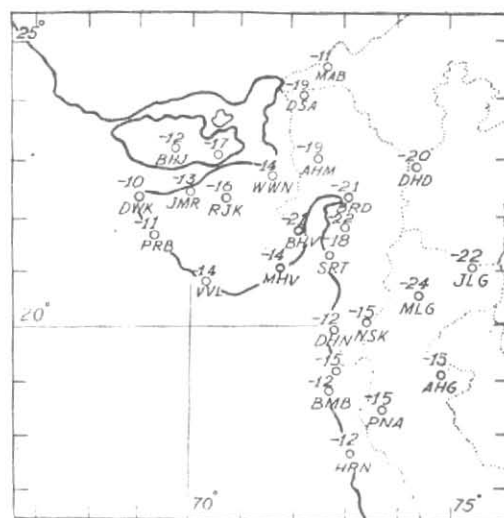


Fig. 2. Minimum temperature change from 8 to 10 January 1954

DROUGHT ENDS IN SOUTH INDIA— NORMAL NORTHEAST MONSOON IN 1953

After six years of drought since 1947, seasonal conditions returned to normal in South India with normal northeast monsoon rains in 1953.

In the wake of the withdrawal of the southwest monsoon from Andhra and Mysore States and north Tamilnad the northeast monsoon set in on 12 October. A series of low pressure waves moved westwards across the south Bay during the season and accentuated its activity and gave frequent spells of rain. Two depressions formed in the south Bay in October, one on the 21st and another on the 26th and moved towards the Circars coast giving copious rains to Tamilnad and coastal Andhradesa. Two more depressions formed in the Andaman Sea in November, one on the 3rd and another on the 21st. The first which approached the Circars-Orissa coast by the 10th did not give much rain in South India. The second depression moved towards south Coromandal coast where it weakened and moved away across the south peninsula as a low pressure wave. This depression gave widespread rains to Tamilnad and Travancore-Cochin. It is also noteworthy that there were no destructive cyclonic storms affecting South India during the season.

The seasonal rainfall was in large excess in Mysore (+75%), moderate excess in Rayalaseema (+45%), and Travancore-Cochin (+39%) and in slight deficit in coastal Andhradesa (-16%) and Madras State (-17%). The deficit in Tamilnad was mainly confined to the districts of North and South Arcot and Tanjore (Vellore—41%, Cuddalore—37% and Nagapattinam—37%). In spite of this deficit, the seasonal conditions in Tamilnad were reported to be good with timely and sufficient rains for the crops.

ABNORMAL REFRACTION

- (1) *Vessel* : M. V. Daressa
 Captain : A. Smythe
Voyage : Muscat to Bombay
Observer : D. P. Smith, 2nd Officer

25 September 1953. Vessel on passage from Kuwait-Basra

Abnormal refraction was observed in the period between 1 to 3 hours after sunset. Misra-al-Ahmadi light observed at 43' (normal 18'), Zuzirat Parsi light 30' (normal 15'), Shatt-el-Arab light vessel at 27' (normal 10'). During this time the vessel's position was checked by radar, and bearing taken by gyro-compass gave a perfect fit. Bearing taken every fifteen minutes for 2 hours. Sky was clear and visibility good. Height of eye throughout was 45'. Bar. 29.85"; Temp. 94°. Sea—smooth, no swell.

- (2) *Vessel* : S. S. Jalamayur
 Captain : T. Rozario
Voyage : Bedibundar to Calcutta
Observer : A. G. George, 3rd Officer

26 October 1953. Position of the ship—
 Lat. 14°45'N. Long. 73°15'E. 1430 GMT.
 Height of eye 40 feet.

Even though the standard range of Oyster Rock Lt. is only 20 miles, the loom of it could be seen quite clearly at a distance of 46 miles. The sky was overcast and it was drizzling very slightly at times.

COLOURED SEA

- Vessel* : S. S. Islami
 Captain : H. J. Palmer
Voyage : Aden to Bombay
Observer : C. Clayton, 3rd Officer

2 October 1953. 0809 GMT. Lat. 15° N,
 Long. 55° 30' E.

The colour of the sea surface was pale green in the radius of approximately 3 miles—beyond that the usual deep blue of the oceans.

Wind-calm, smooth sea, 3/8 sky covered with cumulus clouds of very little vertical form, seemingly flattened (6000 ft est.); Long low slg. swell—depth approximately from chart 1180 fms. Air Temp. 85°. Bar. 30.04". Sea Temp. 84°.

WEATHER, POST-MONSOON SEASON OCTOBER-DECEMBER 1953

Chief features—(1) Withdrawal of the southwest monsoon towards the end of October, (2) Formation and movement of two depressions each in October and November in the Bay of Bengal, and (3) Good rainfall over most parts of the peninsula during the first fortnight of October.

October—The low pressure area, which lay over east Uttar Pradesh at the end of September, moved in an easterly direction and became unimportant over east Bihar by the 2nd evening. Under its influence, fairly widespread rain or thundershowers occurred in upper Assam, sub-Himalayan West Bengal and north Bihar on the 1st and 2nd with a few heavy to very heavy falls in Bihar and Assam; Tura recorded 6" of rain on the 2nd. Sub-Himalayan West Bengal and Assam continued to get local or fairly widespread rain till the 5th and the 7th respectively.

An upper air 'low' moved across the south peninsula in the beginning of the month, causing local or fairly widespread thunder-rain in the south peninsula, south Deccan (Desh) and the south Konkan on the 1st and 2nd. Another upper air low appeared over Deccan (Desh) and adjoining areas on the 5th. It moved into the Arabian Sea in the course of the next two days and the resultant trough persisted in the southeast Arabian Sea off the Malabar-south Konkan coasts till about 11th, becoming unimportant thereafter. In association with the above, local or fairly widespread rain occurred in most parts of the peninsula outside Gujarat and Saurashtra and Kutch during this period. Local thundershowers also occurred in west Madhya Pradesh between the 3rd and 5th and in east Madhya Pradesh between the 5th and 7th, while Vindhya Pradesh had fairly widespread rain on the 5th.

The southwest monsoon withdrew from the country outside the south peninsula by the 8th. It receded from the south peninsula also towards the end of October.

Following the development of the seasonal low over the south and central Bay of Bengal

by about the 11th, the northeast monsoon conditions set in over the south peninsula by the middle of the month. Rainfall was fairly widespread in Malabar-south Kanara, Mysore and Travancore-Cochin between the 12th and 14th. A low pressure wave from the east moved across the Ceylon-Comorin area by the 15th. Later, a well-marked trough persisted in the southeast Arabian Sea off the Malabar coast between the 17th and 22nd. In association with these, fairly widespread rain occurred in the south peninsula between the 15th and 18th.

A low pressure area appeared over the south Andaman Sea on the 18th. It moved westwards and concentrated into a depression, with its centre about 220 miles southeast of Madras on the 21st morning. The depression took a northwesterly course, and after crossing the coast near Nellore by the 22nd evening, weakened into a 'low' over Tamilnad and neighbourhood. The low then moved westnorthwestwards across the south peninsula into the east Arabian Sea and after two days, appeared as a trough off the south Konkan-Kanara coast. It eventually weakened and became unimportant by the end of the month. As the depression was approaching the coast, general and very heavy rain occurred in south coastal Andhradesa on the 22nd. At later stages, fairly widespread rain occurred in the south Konkan, south Deccan (Desh), south Hyderabad, coastal Andhradesa and the south peninsula between the 23rd and 27th. Local or fairly widespread thundershowers also occurred in south Deccan (Desh) on the 28th and 29th, and along the west coast and in Mysore on the 29th and 30th.

Another shallow depression formed in the west central Bay of Bengal by the evening of 26th, with its centre near Lat. $13\frac{1}{2}^{\circ}$ N, Long. $84\frac{1}{2}^{\circ}$ E. Moving in a northwesterly direction, it weakened by the morning of 28th into a 'low' off the Circars coast, which became unimportant by the 31st. Under its influence, local or fairly widespread thundershowers occurred in Tamilnad, Mysore and Travancore-Cochin on the 28th, and in Tamilnad again on the 30th and 31st. Rainfall

was heavy at places in Mysore. According to newspaper reports, about 20 irrigation tanks in Mysore (12 major and 8 minor) were breached, affecting thousands of acres of the standing paddy crop. Local thundershowers also occurred in Orissa on the 24th, in Assam and Gangetic West Bengal on the 25th, in southeast Madhya Pradesh on the 26th and in sub-Himalayan West Bengal on the 28th.

Three western disturbances moved across the extreme north of the country during the month and caused local showers in Kashmir and the hills of the Punjab (I) during their passage.

November—There was a well-marked low, extending from the southeast Bay of Bengal to the north Andaman Sea, on the 1st. The low concentrated into a shallow depression by the morning of the 3rd, with its centre near Lat. 11°N , Long. $91\frac{1}{2}^{\circ}\text{E}$. Moving in a northwesterly direction, it intensified and became a deep depression by the 8th morning when it was centred near Lat. 15°N , Long. $84\frac{1}{2}^{\circ}\text{E}$. Later it followed almost a northerly track and began to weaken at the same time. By the 10th evening, it lay as a low pressure area off the Circars-Orissa coast and became unimportant by the next morning. In association with this depression, local or fairly widespread rain occurred in Gangetic West Bengal and Orissa between the 8th and 11th, with locally heavy to very heavy falls in coastal Orissa on the 9th and 10th; Puri and Gopalpur recorded 12.1" and 6.2" respectively during the 48 hours ending at 0830 IST of 10th. Local rain also occurred in coastal Andhradesa on the 10th, in Gangetic West Bengal on the 12th and in Chota Nagpur on the 11th and 12th.

With the passage of a low pressure wave from the east, the northeast monsoon became more active by about the middle of the month. Local or fairly widespread rain occurred in Travancore-Cochin between the 12th and 21st, in Tamilnad between the 14th and 18th and in Malabar-South Kanara between the 12th and 15th. After a period of comparative inactivity during the next ten days, a revival of the northeast monsoon took place in the

south Bay of Bengal where a depression formed with centre near Lat. 10°N , Long. 92°E on the 22nd evening. The depression moved initially in a westnorthwesterly direction and later almost directly westwards and became deep by the 24th evening, when it was centred near Lat. 11°N , Long. $85\frac{1}{2}^{\circ}\text{E}$. Continuing to move westwards and gradually weakening, it lay as a depression, centred about 60 miles south of Nagapattinam on the 26th morning. By the evening of that day it weakened further into a low pressure area, which subsequently moved away westwards. Under the influence of this depression, fairly widespread rain with a few heavy falls occurred in Tamilnad between the 26th and 28th. South Tamilnad continued to get fairly widespread rain during the rest of the month. Local or fairly widespread showers were reported from Travancore-Cochin between the 28th and 30th.

Of the seven western disturbances which moved across the extreme north of the country during November, five were feeble. The remaining two caused scattered or local showers in the Punjab hills and Kashmir. The weather remained mainly dry over the plains of northwest India, the central parts of the country and the adjoining sub-divisions of the peninsula throughout the month.

December—The northeast monsoon was generally weak during December. In association with the westward movement of a low pressure wave across the extreme south of the country, local or fairly widespread rain occurred in south Tamilnad on the 15th and in Travancore-Cochin on the 16th. The next brief spell of active northeast monsoon conditions occurred between the 25th and 28th. Rainfall occurred locally in Tamilnad on these four days, and was widespread in Travancore-Cochin on the 27th.

The two western disturbances which moved across the northern parts of the country during the first fortnight were feeble. An active western disturbance moved across the Punjab and the western Himalayas between the 25th and 28th. In association with it fairly widespread rain or thundershowers occurred in the hills of the Punjab (I) on the 27th and 28th, with local showers in the hills

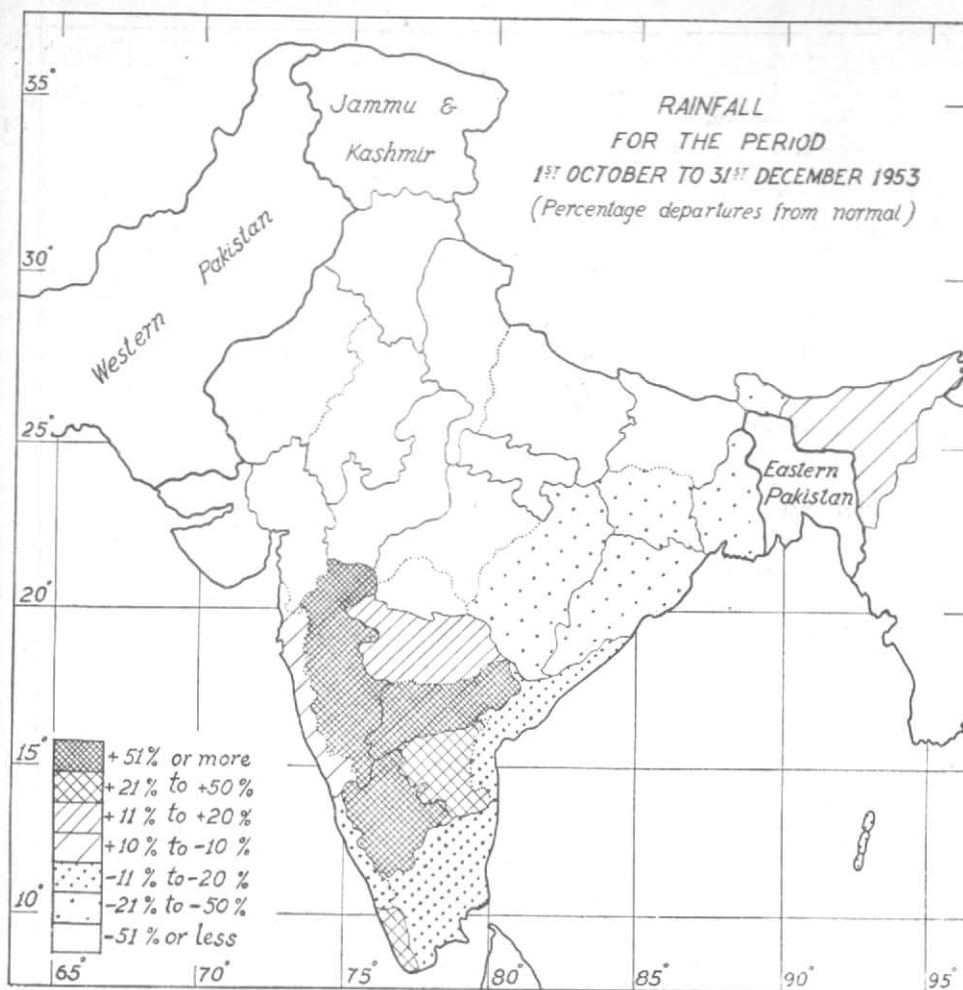


Fig. 1

of west Uttar Pradesh and the plains of the Punjab (I) on the 27th. Snowfall was also reported from a few stations in Jammu and Kashmir on the 26th. Another active western disturbance was moving across the Punjab (I) on the last day of the month. A secondary 'ow' also lay over east Rajasthan and neighbourhood on the same day. In association with these disturbances, fairly widespread rain occurred in the Punjab hills on the 31st with a few thundershowers in east Uttar Pradesh, the plains of the Punjab (I), Vindhya Pradesh and west Bihar.

Weather was mostly dry in northeast India, the central parts of the country and the north peninsula during the month.

Night temperatures were above normal in north India on many days of December, while they were generally below normal in Deccan (Desh) in the later fortnight.

The rainfall distribution over the country during the period under review is shown in Fig. 1.