

## Notes and News

### WORLD METEOROLOGICAL ORGANISATION

The World Meteorological Organisation has started issuing a quarterly publication called "WMO BULLETIN". We have received the first three issues of this publication. The purpose of the bulletin is to provide periodically a summary of the activities of WMO and of developments in international meteorology of interest to Members of the Organisation and others concerned with the application of meteorology to human activity. The first issue (April 1952) contains a brief description of the birth and organisation of WMO as a specialised agency of the United Nations. Each issue also contains summaries of activities of the different Regional Associations and Technical Commissions of WMO. Items of collaboration of WMO with other international organisations are also described in the bulletin. Brief articles on artificial release of precipitation and on arid zone research are the special features in the July and October issues. The bulletin is issued by the Secretary-General, World Meteorological Organisation, Campagne Rigot, Avenue de la Paix, Geneva, Switzerland.

### INTERNATIONAL ASTRONOMICAL UNION

The eighth General Assembly of the International Astronomical Union was held at Rome between 4 and 13 September 1952. More than 400 professional astronomers representing various countries of the world attended the meetings. Dr. A. K. Das, Director, Solar Physics Observatory, Kodaikanal, attended as a representative from India. A number of technical discussions on matters of theoretical and practical interest to astronomers took place at the meetings of 39 Commissions of the Union and their Sub-Commissions. Symposia and lectures were also held during the period.

On 3 September there was a meeting of the Joint Commission on Solar and Terrestrial

Relationships and also a symposium on the same subject. A Sub-Committee set up to go into the question of the unsatisfactory reception of URSIGRAMMES decided that steps should be taken to improve the reception by proper choice of wave lengths and the times of broadcasts.

Among many technical recommendations made at the meetings of the Commissions and Sub-Commissions, the following relating to solar physics and radio astronomy may be mentioned:

(i) Observatories which publish data of areas of sunspots were requested to give areas "as measured" in addition to the "corrected areas".

(ii) Systematic measurement of general magnetic field of the sun and its length variation are necessary to study the physical nature of long period variation of solar activity. It was, therefore, recommended that a few solar observatories should undertake systematic measurement of magnetic field of the sun.

(iii) A Sub-Commission on weather and sites along Eclipse Tracks should be set up to collect and disseminate information important to the planning of eclipse expeditions.

At the second official meeting of the General Assembly on 13 September Professor Otto Struve of U.S.A. was elected the President of the I.A.U. for the next three years. It has been decided to hold the next General Assembly of the I.A.U. in 1955 at Dublin.

### GUST RESEARCH AND GUST REPORTING PROGRAMME

The Third Session of the ICAO Meteorological Division (Paris, 1950) recommended that States should encourage research on the distribution of turbulence and gusts both geographically and with altitude. With a view to facilitate this research, the ICAO Secretariat has devised a model form for distribution to pilots at the commencement of each flight expected to be performed at

altitudes above 10,000 ft and the pilots are requested to report information about incidence of turbulence with its intensity, duration and extent as also any meteorological phenomena accompanying it. The forms are collected at the termination of the flights by the States concerned, and with added notes on the accompanying synoptic situations, they are passed on to the United States Weather Bureau, which has undertaken to analyse the data and to supply the result of the analysis to the interested countries. As a member of ICAO, India is participating in this scheme with effect from 1 October 1952.

#### AREA METEOROLOGICAL BROADCAST CENTRE AT BOMBAY

An Area Meteorological Broadcast Centre intended to serve the needs of aircraft in flight on long international air routes and of widely separated meteorological offices serving such routes has begun to function from 25 August 1952 at Bombay. The Bombay Area Broadcast Centre radiates once every three hours aerodrome forecasts for a number of international aerodromes in India and Pakistan and once every six hours a route forecast for Bombay-Dahran section of the Bombay-Cairo route. It has a range of 2500 nautical miles.

#### CENTRAL BOARD OF IRRIGATION

The Silver Jubilee Session of the Central Board of Irrigation was held at New Delhi from 17 to 22 November 1952. A. K. Roy and V. Ganesan attended the meetings as representatives of the India Meteorological Department.

#### CLEAR AIR TURBULENCES

1. On 12 July 1952 at 2351 GMT, Air India International Constellation reported moderate turbulence at the position  $28^{\circ}52'N$  and  $37^{\circ}05'E$ . The aircraft was at a pressure altitude of 17,500 ft and there was no cloud at any level. The turbulence lasted for six minutes. The wind before the incident was  $325^{\circ}/9$  knots but changed to  $245^{\circ}/15$  knots later. The air temperature was  $4^{\circ}C$  but dropped to  $0^{\circ}C$  within 15 minutes. The

indicated air speed was 165 knots and the heading  $105^{\circ}$ .

It would appear that the area was associated with marked temperature gradient as well as horizontal shear.

2. On 14 July 1952 a Constellation flying at a pressure altitude of 17,500 ft experienced slight to moderate turbulence for a period of thirty minutes (from 0545 to 0615 GMT) near the position  $25^{\circ}52'N$  and  $51^{\circ}28'E$ . The aircraft did not notice any cloud. The air temperature was  $-3^{\circ}C$  and the wind  $340^{\circ}/20$  knots. The indicated air speed was 178 knots and the true heading  $104^{\circ}$ .

A depression seems to have been moving through Russian Turkestan on 13 July and its secondary was over East Iran on the 14th. At 1200 GMT on the 14th, Kerman reported thunder with NNE/10 knots wind and Zahidan continuous heavy rain and SSW/15 knots wind. Sharjah reported at 0600 and 1200 GMT small amounts of altocumulus clouds. It is possible that a weak front associated with the secondary over East Iran was trailing into the Persian Gulf and the turbulence was in its vicinity.

#### SEVERE TURBULENCE AND ICING EXPERIENCED BY THE BOAC "COMET" JET AIRCRAFT

The following reports which have been obtained by courtesy from the Regional Manager, India, BOAC, New Delhi, are of interest regarding high level turbulence and icing in clouds, during the monsoon season. Brief notes about the synoptic situation at the time of the reports are also given.

##### 1. G-ALYV- Service CTT 025

" At 1140Z on 28 July 1952 we moved out from Delhi for Karachi. We climbed up through broken cloud to stabilising altitude of 35,800 ft. At approximately 1215 Z after a small alteration of course to avoid cloud, we entered cloud of thin altostratus or cirrostratus type. This gradually thickened up until at 1225 Z we flew into what appeared to be a very active thunderstorm. There was a considerable amount of

lightning though the aircraft was not struck and the aeriels were earthed and also some hail—heavy at times. The speed was reduced to between 190 and 195 knots in an endeavour to gain altitude and reduce airspeed to a more suitable one for turbulence. Alterations of course were made as the occasion seemed to warrant.

Turbulence at times was severe and lasted in all for about 6 minutes in which time the G recorder recorded a maximum of 7 and a minimum of -4. On the whole, this did not appear to be an accurate record of what was experienced.

For a further period of 5 minutes there was light turbulence and then again the aircraft appeared to enter another thunderstorm. The G recorder had been reset and this time recorded 6 and -3½. Again there was hail with considerable lightning. After this the aircraft flew out of cloud into clear cloudless conditions when it was seen that we had flown through a long continuous line of thunderstorms stretching N-S across the edge of the Sind Desert.

Ambient temperatures varied from -35°C approximately at the commencement of the turbulence to -50°C, approximately when we flew into the clear at 42,560 ft.

The only damage in the aircraft appeared to be the bar box which fell off a shelf in the rear light luggage hold breaking some glasses. No hand baggage on the seats or in the racks fell off and no one was injured or thrown around as all were strapped in."

The aircraft apparently crossed the I.T.F. between Delhi and Jodhpur.

## 2. G-ALYX—Service CTT 029

"On the climb out of Calcutta to Bangkok on 17 August 1952, moderate intermittent turbulence was encountered in passing through cumulonimbus cloud. The maximum gust occurred at 30,000 ft at 0258 Z at an I.A.S. of 192 knots and at an ambient temperature of -20°. The pilots' accelerometer recorded extreme readings of 5 and -1g".

The monsoon was active along route.

## 3. Comet Demonstration Flight

"On a Comet demonstration flight at Delhi, airframe icing was experienced on the climb through typical monsoon cloud. Icing occurred between 0636 and 0645 GMT on 20 August 1952 and between 20,000 and 25,000 ft. Average temperatures recorded were -2°C at 20,000 ft where icing was first noticed and -13°C at 25,000 ft where the aircraft climbed into clear air. The location of the icing was about 60-100 n. miles NE of Delhi.

The icing was first noticed on the wind-screens, and appeared to be 'Glime' (*i.e.*, mixture of glazed and rime icing). No icing cloud could be seen on the wind leading edges, but inspection of the engine intake from the galley window showed an accretion of about ¼" depth.

Application of heat showed that there was, in fact, ice on the wings, as it could then be seen coming off. The engine intakes did not clear from the application of heat, and some ice remained on the lips. This slowly evaporated off.

Some radio fading on HF R/T was experienced at the same time as the ice was forming, but it was not possible to establish whether there was any connection between these two phenomena."

On this day, a shallow monsoon depression lay over west Uttar Pradesh and northeast Rajasthan with its central region near Agra at 0300 GMT and was weakening. Agra had recorded 6" of rainfall during the 24 hours preceding 0300 GMT on 20th and a further ½" between 0300 and 1200 GMT of the same day.

## WEATHER, MONSOON SEASON—1952

*Chief features—(i)* Onset of the monsoon along Malabar coast about 10 days in advance of the normal date, *(ii)* four spells of severe floods in Assam and north Bihar and *(iii)* generally weak monsoon over the peninsula, associated with drought conditions over the southern half for most of the season, and in Gujarat and Saurashtra and Kutch from the second week of August onwards which ultimately led to a moderate to large

deficiency of rainfall in south Hyderabad, Rayalaseema, Tamilnad and Travancore-Cochin.

*June*—Under the influence of a severe cyclonic storm between 19 and 25 May in the west central Bay of Bengal, the Arabian Sea branch of the southwest monsoon was ushered into Travancore-Cochin by 20 May, about 10 days earlier than the usual date. Its further advance was, however, slow and it extended into Malabar-south Kanara only by 28 May, and the south Konkan by 3 June. The monsoon remained active in the south Konkan between the 3rd and 5th and weakened thereafter. It again revived on the 9th and advanced into Deccan (Desh). Very heavy falls occurred at most places in the south Konkan on that date, with fairly widespread moderate rain in Deccan (Desh). A general strengthening of the monsoon took place along the west coast on the 13th, and the monsoon extended to the north Konkan by 14th, and west Madhya Pradesh and south Madhya Bharat by the 15th. Nagpur experienced a severe squall of 84 mph on the afternoon of the 15th.

The Bay branch of the monsoon had advanced into the northeast Bay of Bengal by the end of May, but its further advance inland occurred only by 15 June. Thunder showers occurred locally on most days in Assam and sub-Himalayan West Bengal during the first fortnight. The monsoon advanced into Assam and West Bengal by the 16th and into the rest of northeast India during the following two days. The advance of the monsoon was accompanied by heavy falls in northeast Assam, which according to newspaper reports caused high floods in Brahmaputra and its several tributaries. An area of about 200 sq. miles in Lakhimpur district in northeast Assam was reported to be submerged affecting about 800 villages.

Fairly active monsoon conditions prevailed in northeast India, the central parts of the country and along the west coast practically throughout the latter half of June. The monsoon was vigorous in the north Konkan between the 21st and 23rd and extended into Saurashtra and Kutch by the 22nd. A heavy downpour of 16" was recorded at Santa Cruz

(Bombay) within 48 hours ending 0830 IST on 22nd. These heavy rains caused considerable dislocation of road, rail and air traffic with floods in the low lying areas near Bombay. Under the influence of a well marked "Low" which lay over southwest Uttar Pradesh and neighbourhood between 21st and 26th, the monsoon advanced into Uttar Pradesh by the 22nd and also gave locally very heavy falls in Vindya Pradesh on the 22nd, and in southwest Uttar Pradesh on the 24th and 25th. Mainpuri reported 8" of rain on the 24th. A shallow depression moved from the head of the Bay of Bengal to southwest Uttar Pradesh between the 24th and 28th after which it recurved north-northeastwards and became unimportant over northeast Uttar Pradesh by the morning of 1 July. Under its influence the monsoon advanced into the Punjab (I) by 27 June. Abnormally heavy rains occurred in and near Gwalior town between the 26th and 29th when a rainfall of about 24 inches was recorded. According to press reports, these heavy rains flooded low lying areas, damaged houses and dislocated communications in Gwalior town. The monsoon remained feeble for most of the month in the interior of south peninsula.

Averaged over the plains of India, the rainfall during June was normal.

*July*—The monsoon remained generally weak over the country outside northeast India till about the 4th. Thereafter it revived over the central parts of the country and along the west coast under the influence of a cyclonic storm which formed at the head of the Bay of Bengal on the 4th morning. The Bay storm crossed coast near Contai and after weakening moved as a depression to northwest Uttar Pradesh, where it became unimportant by the 8th. The monsoon was active in northeast India and the central parts of the country between the 4th and 7th and in east Rajasthan and Gujarat between the 6th and 9th, with locally very heavy falls in Madhya Bharat on the 6th and 7th. An exceptionally heavy fall of 17" was reported from rain gauge station Biaora on the 7th. The country suffered a partial break in the monsoon between the 10th and 13th when the

rainfall was confined to Assam, sub-Himalayan West Bengal, north Bihar and the Punjab-Kumaon hills. Cherrapunji recorded 76" of rain during these four days with an exceptionally heavy fall of 32" recorded on the 11th. The river Brahmaputra and its tributaries rose in spate and caused devastating floods over an area of 4000 sq miles in seven districts of the northeastern border of Assam. Floods were also reported from the Darbhanga district in Bihar where the rivers Kamala and Kosi overflowed their banks, submerging several villages. Widespread rain occurred in Tamilnad on the 11th and 12th with locally heavy falls on the latter date. The monsoon strengthened along the Konkan-Kanara coast by the 13th and made a fresh advance into Deccan (Desh), south Madhya Pradesh and Uttar Pradesh by the 14th. The monsoon was also vigorous in the Konkan between the 15th and 19th, Santacruz (Bombay) reporting 22" within 48 hours ending at 0830 IST on the 17th. A shallow depression moved from the northwest Bay of Bengal to Chota Nagpur and neighbourhood between the 19th and 22nd and weakened thereafter. A well marked low also existed over lower Sind and adjoining west Rajasthan between the 19th and 23rd. Another "Low" existed over southeast Rajasthan and the adjoining parts of Madhya Bharat between the 25th and 27th. These disturbances, along with a shallow depression which moved from Chota Nagpur and neighbourhood to north Madhya Bharat between the 27th and 31st, helped to keep the monsoon active over the central parts of the country, east Rajasthan, Gujarat, the Konkan, Deccan (Desh) and north Hyderabad practically throughout the second half of July when spells of widespread rain with locally heavy falls occurred in these areas. Local floods were reported from Gujarat during this period. The monsoon remained feeble in Bihar and the southern half of the peninsula outside Malabar-south Kanara for most of the month causing a deficiency of rainfall in those parts.

Averaged over the plains of India, the rainfall during July was 1 per cent in defect.

*August*—The month of August was marked by a moderate to large excess of rainfall

in west Uttar Pradesh, the Punjab (I) and Vindhya Pradesh. Four depressions traversed the country during the month and under their influence, the monsoon gave good rainfall over north India and the central parts of the country. The first depression moved westnorthwestwards from the Bay of Bengal to north Madhya Bharat and southeast Rajasthan between 31 July and 5 August. In association with it, fairly widespread rain occurred in Gangetic West Bengal, Chota Nagpur and north Orissa on the 1st and 2nd and in east Madhya Pradesh between the 1st and 4th. Locally very heavy falls occurred in east Madhya Pradesh and the north Punjab (I) on the 3rd. During the next three days the monsoon was generally active over north India, the central parts of the country and Gujarat. In this period widespread and heavy to very heavy rain occurred in west Madhya Pradesh and south Madhya Bharat with locally heavy rain in south Bihar, northwest Uttar Pradesh and the Punjab (I) on the 4th. The monsoon generally weakened by the 6th, but Orissa and northwest Uttar Pradesh continued to get fairly widespread and occasionally heavy rain. The monsoon again revived over north India and the central parts of the country by the 11th, and a depression formed in the northwest Bay of Bengal on the 13th morning. This depression moved upto Vindhya Pradesh and became unimportant there by the 16th. Locally heavy to very heavy rains occurred between the 17th and 22nd in Uttar Pradesh and the Punjab (I). According to newspaper reports about 20 villages in Agra district were flooded as a result of these heavy rains. The river Ravi in the Punjab was also reported to have flooded about 100 villages. The water level in the Jamuna crossed the "danger" mark of 672 ft above sea level at Jamuna Bridge, Delhi, on the 26th and it was reported that 25 Delhi villages covering an area of 64 square miles were inundated. The river Ganga was also reported to have crossed the danger level at Monghyr on that date. The rains, however, brought some relief to crops in Uttar Pradesh. Another shallow depression — third in the month—formed in the northwest Bay on the 20th. It crossed the Orissa coast the following night

and weakening rapidly merged into the seasonal trough by the 21st evening. In association with it, there was well distributed moderate rain over most parts of the peninsula on the 21st and 22nd, with locally heavy falls in Madhya Pradesh on the 22nd and in the south Konkan on the 22nd and 23rd. Very heavy falls of rain also occurred at a number of places in west Madhya Pradesh on the 25th and in the adjoining parts of Madhya Bharat on the 26th. An unprecedented heavy fall of 17" occurred at Jabalpur (west Madhya Pradesh) between 0130 IST and 1130 IST of the 25th causing floods in the neighbouring areas.

The rainfall was also heavy in the hills of Assam between the 23rd and 28th, Cherrapunji reporting a heavy fall of 16" on the 27th. According to newspaper reports, the water level of the Brahmaputra, Lohit, Kolong and Jamuna rose rapidly and submerged several villages on their banks in Kamrup, Lakhimpur and Nowgong districts of Assam. Extensive damage was caused to standing paddy crops and hundreds of houses and many herds of cattle were swept away. The monsoon was weak over the rest of the country since the 27th except in Bihar and Uttar Pradesh which divisions received widespread rain between the 26th and 29th. According to newspaper reports, very heavy floods occurred in the river Kosi on account of which about 111 villages were submerged and about 5000 houses collapsed in Saharsa district of Bihar.

Fairly widespread but generally moderate rain occurred in the Konkan and Malabar-south Kanara on most days of the month, in Travancore-Cochin during the first half and in Hyderabad between 3rd and 5th, 7th and 10th, and 20th and 22nd. Local showers occurred in Deccan (Desh) on all days. The monsoon was mostly feeble over the remaining parts of the peninsula.

Averaged over the plains of India, the rainfall during August was 1 per cent in excess.

*September*—The month of September was characterised by generally weak monsoon over the country outside northeast India and east Madhya Pradesh. The monsoon practically withdrew from northwest India and west Uttar Pradesh in the beginning of

September and weather remained mainly dry in these divisions during the month.

In the first four days fairly widespread rain occurred in northeast India, east Uttar Pradesh, Vindya Pradesh and east Madhya Pradesh with locally heavy falls of rain in east Uttar Pradesh and the adjoining parts of Bihar on the 4th. The monsoon was also markedly active in east Madhya Pradesh between the 5th and 7th. Dhamtari—a state rain gauge station in that subdivision recorded 12.3" of rain on the 5th. Reports also appeared in the press about severe floods in the river Kosi which had flooded about 400 villages in Darbhanga district of Bihar by the 8th. A population of about 2 lakhs was affected and nearly 60 per cent of the paddy crop was damaged. By about the same date, the rivers Brahmaputra, Lohit, Dibang, Ranganodi and Subansiri rose rapidly in Upper Assam and caused extensive damage to many acres of standing paddy fields in north Lakhimpur, Dibrugarh, Doomdooma and in the Golaghat subdivision of the Sibsagar district. A shallow depression formed in the northwest Bay of Bengal by the 10th morning. This weakened into a trough of low pressure extending from the northwest Bay to southeast Uttar Pradesh by the 11th and became unimportant on the 13th. In association with it fairly widespread rain occurred in northeast India, Uttar Pradesh and the central parts of the country on the 11th and 12th with locally very heavy falls in and around Chota Nagpur on the 11th. During the second fortnight three low pressure waves moved westwards across north Burma into the central and north Bay of Bengal, and caused unsettled conditions to prevail there. This gave rise to fairly widespread rain in Assam, sub-Himalayan West Bengal, Orissa and east Madhya Pradesh on the 16th and 17th, with heavy to very heavy falls of rain in east Madhya Pradesh and the adjoining parts of Orissa. Another spell of well-distributed rain occurred in northeast India between the 20th and 25th. The monsoon was particularly vigorous in sub-Himalayan West Bengal, Bihar and the adjoining parts of east Uttar Pradesh on the 23rd, on which date Darjeeling reported 13" of rain and Arrah 5". As a result of these heavy rains, landslips and breaches in road

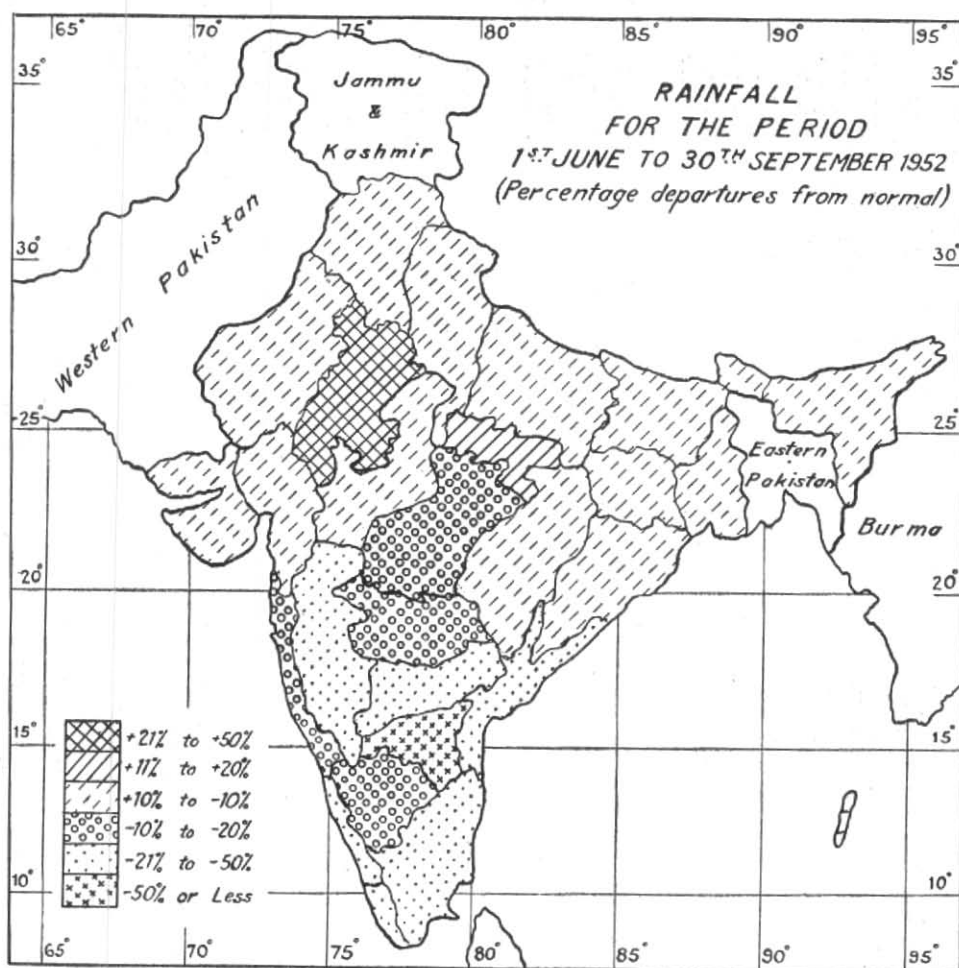


Fig. 1

occurred between Kalimpong and Darjeeling. The rivers Kosi, Kamala, Balan, Jiwach and Bhagmati in Bihar rose in spate and flooded an area of about 500 sq. miles in Darbhanga district, damaging the bulk of the standing paddy in an area of over 80,000 acres. Road communications in several parts of the affected areas were also dislocated. Except for scattered or local light showers in the Konkan, Deccan (Desh), Hyderabad and coastal Andhradesa, on a few days, weather remained dry over the peninsula during the first half of the month. Fairly widespread rains, however occurred in Hyderabad between the 18th and 28th, in coastal Andhradesa between the 20th and 23rd and in Mysore and south

Deccan (Desh) between the 27th and 30th. Local showers also occurred in Deccan (Desh) between the 20th and 24th which, coming after a period of drought of about three weeks were welcome for the crops. The southwest monsoon had practically withdrawn from northwest India and west Uttar Pradesh since the beginning of the month. It withdrew from east Uttar Pradesh, northeast India and the central parts of the country by the 27th, and by the 1st of October, it had withdrawn from the entire country excepting the extreme south of the peninsula.

Averaged over the plains of India, the rainfall during September was 32 per cent in defect.

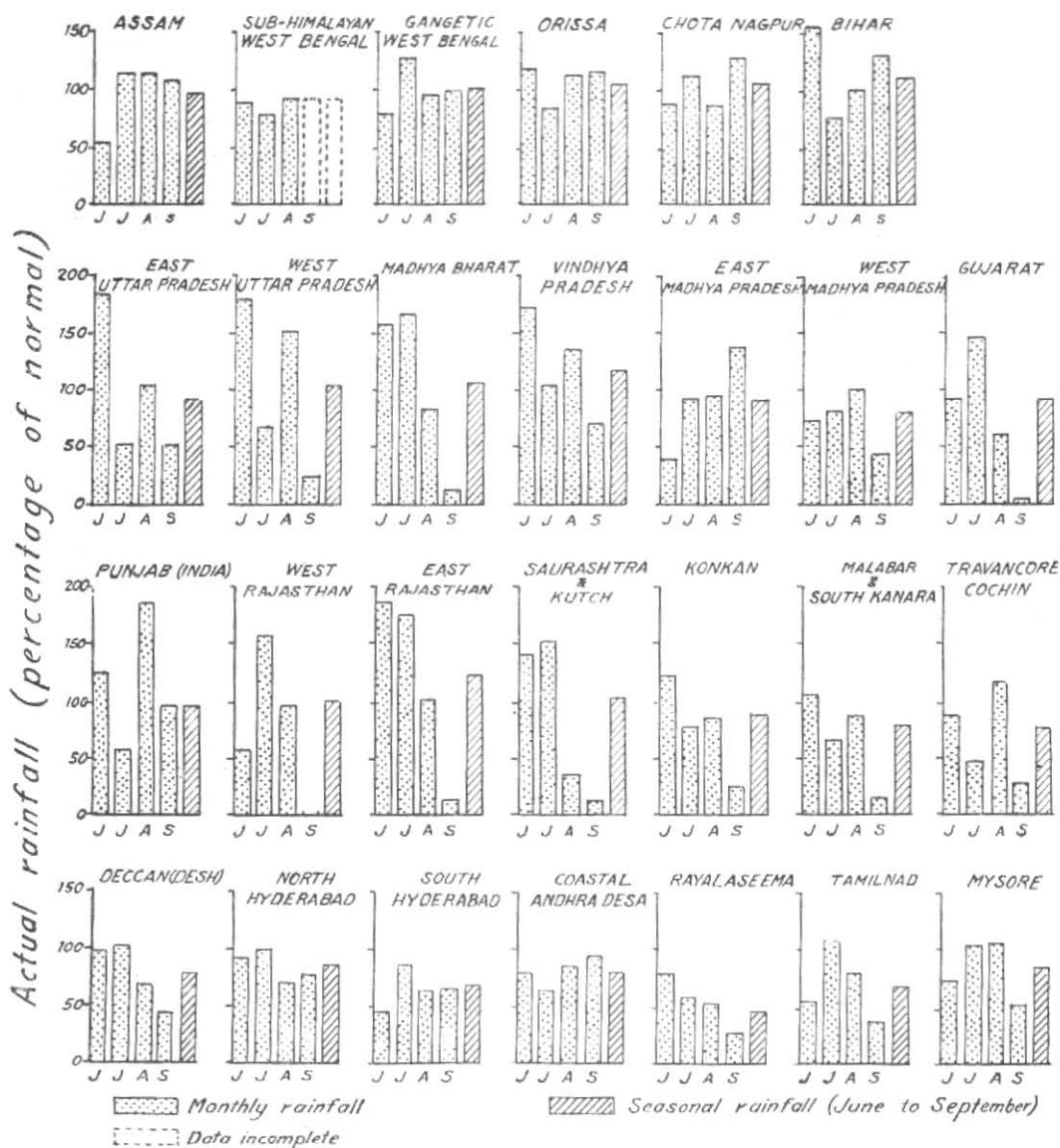


Fig. 2. Progress of the monsoon month by month—1952

The rainfall for the season as a whole was in moderate to large defect in south Hyderabad, Rayalaseema, Tamilnad and Travancore-Cochin and in slight defect in the rest of the peninsula outside Gujarat and Saurashtra and Kutch, and in west Madhya Pradesh. It was slightly in excess in east Rajasthan and Vindhya Pradesh, and normal over the rest of the country. Averaged over the plains of India, the rainfall was 7 per cent in defect.

Rainfall distribution for the monsoon season and the progress of monsoon over the

various subdivisions of India month by month are given in Figs. 1 and 2.

#### SEVERE NAGAPATTINAM CYCLONE OF 30 NOVEMBER 1952

A very severe cyclone from the south Bay of Bengal struck the south Tamilnad coast near Nagapattinam on the afternoon of Sunday, the 30 November 1952. It caused widespread devastation in the Tanjore district and the adjoining areas of Tiruchirapalli and South Arcot districts. About 400 human lives and thousands of cattle are reported



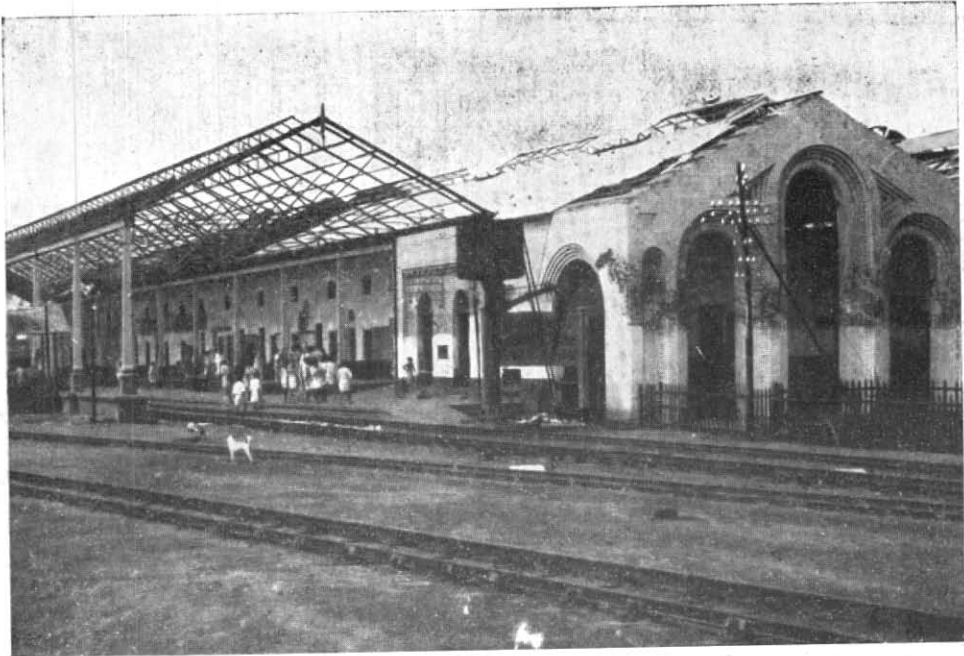


Fig. 1. Entire roof of the railway platform of Nagapattinam Station was blown off  
(Photo : *The Hindu, Madras*)



Fig. 2. The damaged municipal bus stand at Nagapattinam  
(Photo : *The Hindu, Madras*)



Fig. 3. Nagapattinam port wall lies broken and scattered on the beach  
(Photo : *The Hindu, Madras*)



Fig. 4. Trees uprooted in the municipal park, Mayavaram  
(Photo : *The Hindu, Madras*)

to have been lost. High winds associated with the cyclone uprooted a large number of trees, severely damaged huts and buildings and destroyed thousands of acres of plantations and gardens. It also caused widespread disruption and dislocation of road, rail, telegraph and other communications in the area. A storm wave is reported to have swept inland to a distance of about 5 miles along the coast near Nagapattinam causing considerable damage to crops and property. A few photographs showing the damage caused by the cyclone are given on pages 95-96.

2. The cyclone originated as a depression in the south Bay of Bengal on the night of 27 November 1952. It intensified rapidly and became a cyclone, centred about 600 miles to the southeast of Madras on the morning of the 28th. *S. S. Worcestershire* which passed close to the centre of the cyclone on the morning of 28th reported "whole gale" from an easterly direction exceeding 50 knots and continuous rain. Moving westnorthwest and intensifying further, it became a severe cyclone centred about 400 miles southeast of Madras on the morning of the 29th. *S. S. Jalagopal* which was near the storm centre on the early morning of 29th reported winds of hurricane force (direction W by N) throughout the night (28th-29th) with continuous heavy rain; visibility nil; heavy sea with westnorthwesterly heavy swell, mean height of waves being 25 to 30 ft. The severe cyclone continued to move westnorthwest and was centred about 100 miles east/eastsoutheast of Nagapattinam on the morning of the 30th. *S.S. Clan Mactavish* which was just to the north of the storm centre off Nagapattinam reported at 9-30 A.M. of 30th very high easterly winds exceeding 60 knots. The severe cyclone moved westwards later and struck the coast just to the south of Nagapattinam on the afternoon of the 30th at about 2 P.M. After crossing coast, the cyclone weakened and moved rapidly westwards as a depression and on the morning of 1 December it lay as a well marked trough of low pressure off the Malabar coast.

3. The cyclone was a very severe one and had a small inner core of hurricane winds.

The pressure deficiency at the centre was about 40 mb. The barograph at Nagapattinam recorded the lowest pressure of about 970 mb. The wind at Nagapattinam reached gale force by about 1100 IST. Thereafter it increased to hurricane force and gradually veered from northeast to southeast. Wind continued to blow with hurricane force till about 1630 IST after which it began to abate. From the veering of the wind observed at Nagapattinam and from the fact that very strong onshore easterly winds swept the coast at Nagapattinam, there appears to be no doubt that the cyclone centre passed slightly to the south of Nagapattinam, perhaps midway between Nagapattinam and Point Calimere. Nagapattinam observatory measured a wind speed of 50 mph at 1130 IST on the 30th, after which the wind instrument appears to have got damaged. It appears probable from the severe nature of the havoc caused, *viz.*, the uprooting of big trees and the bending of telegraph poles, that the wind reached a speed of 80 to 90 mph or even more around the storm centre. Tiruchirapalli which is about 80 miles to the west of Nagapattinam, experienced gales after about 3 P.M. and the strongest winds, probably 50 to 60 mph, were experienced there at 7 to 8 P.M.

4. A noteworthy feature of this cyclone is that the rainfall associated with it was not so very heavy even in the coastal districts as to cause severe floods, although there was rain over a wide area. The raingauge at Nagapattinam observatory was flooded by sea water and rainfall there could not be measured after 1130 hours on the 30th. The following are some of the heavy rainfall amounts recorded during the 24 hours ending at 0830 IST of 1 December, according to observatory and newspaper reports and also provincial raingauge data so far collected from the districts:—15" at Alangudi (Tiruchi), 9.1" at Agasthyampalli (Tanjore), 9" at Sholingur (North Arcot), 7.7" at Pudukottai (Tiruchi), 6.5" at Tirukoyilur (South Arcot), 6" at Chingleput and Pattukottai, 5.8" at Adirampattinam (Tanjore) and 5.6" at Mayavaram.