

Weather

MONSOON SEASON (JUNE—SEPTEMBER 1959)

Chief features—The southwest monsoon this year will be particularly remembered for the devastating floods it caused in Assam in June, in Jammu and Kashmir and Saurashtra and Kutch in July and the unprecedented floods in Gujarat and coastal Andhra Pradesh in September and in West Bengal and Bihar early in October. While the establishment of the monsoon along the west coast was delayed by nearly two weeks its subsequent progress northwards was quite rapid and the whole country came under its sway by about the normal date. Its activity was maintained at an even pace over most parts of the country with practically no long breaks till the end of the season which extended well into October. As may be seen in Fig. 1, the total rainfall during the season was normal or in excess over the whole country outside Orissa, Madras State and the belt extending from east Uttar Pradesh to Assam. The monsoon withdrew from the whole country by 18 October.

The special features of weather during the various months are described below.

June—Persistent heavy rains in Assam leading to devastating floods there and a delay of nearly two weeks in the establishment of the monsoon along most of the west coast and in the Peninsula, were the chief features of weather in June.

The Bay branch of the monsoon which had advanced into the Andaman Sea and the southeast Bay of Bengal towards the end of May extended further northwards into the east central Bay by 3 June and into the northeast Bay of Bengal by 6th. It advanced into Assam on 14th and remained

active over the area till about 24th causing persistent rain with some heavy to very heavy falls. Due to these continuous heavy rains, rivers in Assam and Manipur State rose in spite of flooding low lying areas and causing considerable damage to standing crops particularly in the districts of Kamrup, Cachar, Lakhimpur and Sibsagar. There was also loss of a few human lives.

The Arabian Sea branch of the southwest monsoon advanced into south Kerala on 31 May. In association with a shallow trough of low pressure in the east central Arabian Sea, the monsoon advanced further northwards into north Kerala on 4th, into coastal Mysore on 5th and the south Konkan on 6th but weakened gradually thereafter and did not progress further during the next two weeks. Later, in association with a shallow depression from the west central Bay of Bengal and a well marked trough of low pressure off the Malabar, Kanara and the south Konkan coasts, the monsoon strengthened progressively along the west coast upto Lat. 16°N by 24th.

A depression formed in the east central Arabian Sea on the morning of 25th with its centre about 220 km to the west of Bombay. Moving northwestwards at first and west-northwestwards later, it lay as a deep depression with its centre about 300 km to the southwest of Karachi on 28th morning. It rapidly intensified into a severe cyclonic storm the same evening and was located about 250 km to the southsoutheast of Jiwani on 29th morning. Under its influence, Arabian Sea branch of the monsoon current strengthened rapidly and extended northwards, establishing itself over the Konkan,

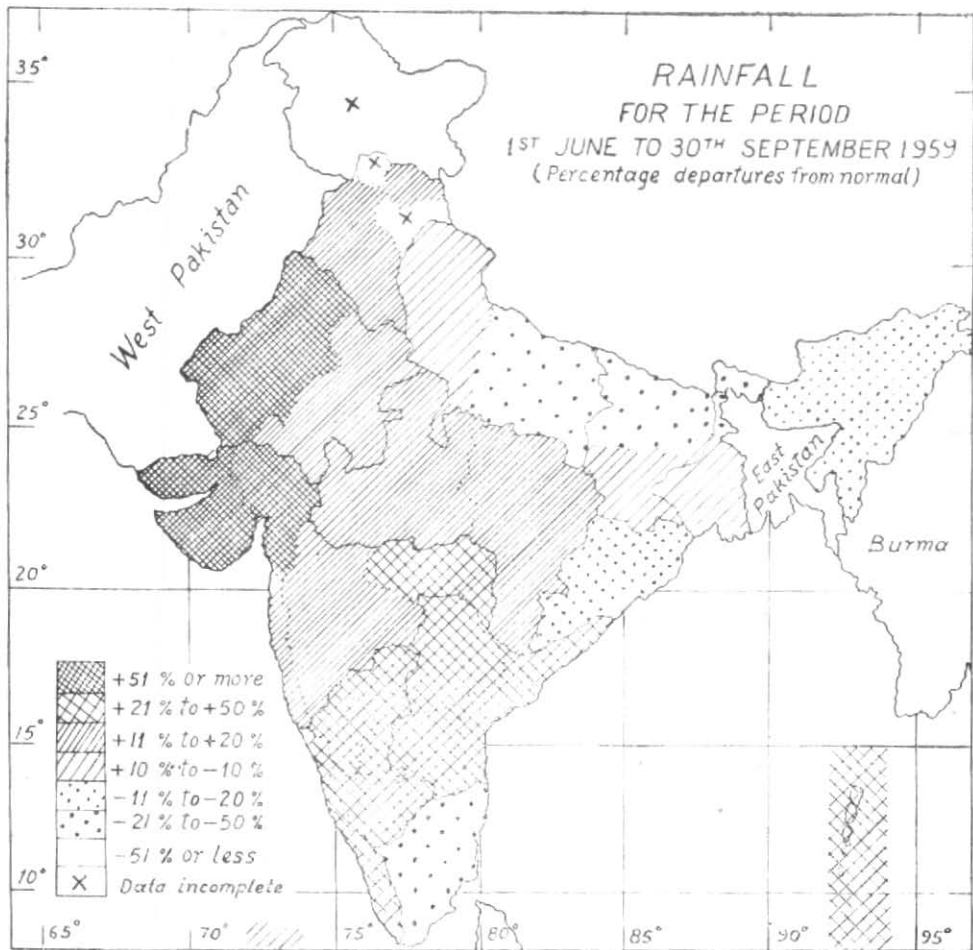


Fig. 1

south Gujarat and south Saurashtra by 26th morning.

Another depression formed in the north Bay of Bengal and the neighbourhood on 27th evening and rapidly concentrated into a cyclonic storm by 28th morning with its centre about 280 km to the southeast of Puri. Moving northwestwards it crossed the north coast between Puri and Chandbali on 29th evening. Thereafter, moving westnorthwestwards and weakening at the same time, it lay as a deep depression with its centre

about 60 km to the east of Raipur on the morning of 30 June. In association with it both the branches of the monsoon advanced rapidly over the country and by the end of the month established themselves over the whole country outside Jammu and Kashmir, Himachal Pradesh, the Punjab (I) and west Rajasthan.

The total rainfall for the month of June was generally in excess in most parts of the Peninsula and in defect in the rest of the country.

July—Good monsoon activity over most parts of the country and a spell of very heavy rains in Jammu and Kashmir and in Saurashtra and Kutch were the main features of July.

The remnant of the last month's cyclonic storm lay as a deep depression with its centre about 125 km to the northwest of Ratlam on the morning of 1 July. It finally merged in the seasonal low by 5th evening after causing vigorous monsoon conditions along and off the Sind, Kathiawar and the Konkan coasts and in Gujarat and Saurashtra and Kutch between 1st and 5th.

The monsoon extended into the remaining parts of northwest India by 8 July in association with a shallow depression from the northwest Bay of Bengal which crossed the Orissa coast on the night of 4th and 5th and finally moved across the Punjab hills as a low pressure area on 9th. A few heavy to very heavy falls were reported from Jammu and Kashmir, Himachal Pradesh and the Punjab-Kumaon hills on 5th and 6th, Jammu recording 28 cm on 5th. According to press reports, the heavy rains caused unprecedented floods in Jammu and Kashmir inundating almost the entire central valley of Kashmir. There was considerable damage to standing crops and property and loss of some human lives.

Another depression formed on 10th evening over the Sunderbans coast and moving across the entire breadth of the country emerged into the northeast Arabian Sea by 15th morning. Under its influence active monsoon conditions prevailed in Gangetic West Bengal and Bihar Plateau on 10th and 11th, in Madhya Pradesh on 12th and 13th, in Gujarat and in Saurashtra and Kutch on 14th and 15th. Bhuj had an all time record rainfall of 47 cm on 15th. The heavy rains at Bhuj flooded low lying areas and caused collapse of several buildings and houses.

During the rest of the month the activity of the monsoon was generally maintained over most parts of the country in association with a depression from the west central Bay of Bengal and two low pressure systems, one of which appeared over south Rajasthan and the other one over south Orissa and moved away westwards across Rajasthan. The monsoon was particularly vigorous over Saurashtra and Kutch on the 27th. As a result of the heavy rains, floods were reported from various parts of the country, particularly from coastal Andhra Pradesh, Mysore State, the Punjab (I) and Saurashtra and Kutch during the last week of the month.

The total rainfall in July was either normal or in excess over most parts of the country outside northeast India and east Uttar Pradesh where it was generally in defect.

August—There was well distributed rainfall over the region extending from Gangetic West Bengal to the Punjab (I) during the first half of the month and over the belt extending from Orissa, southeast Madhya Pradesh and Telangana to Rajasthan, Gujarat and Saurashtra and Kutch during the last ten days of the month.

A land depression formed over West Bengal and the neighbourhood with its centre on the morning of 4th between Asansol and Jamshedpur. Moving westnorthwestwards, it weakened into a low pressure area while over Madhya Pradesh on the 7th and merged in the seasonal low by 8th. Under its influence, the activity of the monsoon was maintained over the region extending from West Bengal and Orissa to the Punjab (I) and east Rajasthan and also in Vidarbha and the Konkan between 4th and 8th. During the next two weeks, in association with three low pressure systems which moved northwestwards across Gangetic West Bengal and Bihar, there was well distributed rainfall in West Bengal, Bihar and northwest India.

The monsoon was generally weak along the west coast and in the central parts of the country between 10th and 19th. Thereafter, it strengthened over these regions in association with the formation of a low pressure area at the head of the Bay of Bengal on 19th and its movement inland on the next day. It lay as an extended low from northwest Madhya Pradesh to the Orissa coast for the next 5 days. The southeastern end of this extended low became accentuated on 26th and a land depression formed over Orissa and the neighbourhood on 27th morning with its centre near Titilagarh. Taking a northwesterly course it weakened by 28th into a low pressure area over northwest Madhya Pradesh where it persisted for two days and finally merged in the seasonal trough by the end of the month. In association with this depression, well distributed rain occurred in Rajasthan, Saurashtra and Kutch, Gujarat, the Konkan, Maharashtra, the central parts of the country and Telangana, during the last week of the month. Fairly widespread rain also occurred in and near the Punjab (I) during the period. According to press reports, extensive floods occurred in Ambala and Tehri Garhwal districts involving considerable loss to property.

The total rainfall during August was normal or in excess over most parts of the country.

September—The most outstanding feature of this month was the abnormally heavy rainfall over the central parts of the country in association with a depression, resulting in unprecedented floods in the rivers Tapti and Godavari.

In association with the formation of a low pressure area which extended from northwest Madhya Pradesh to northwest Bay of Bengal and its further movement northwestwards during the first week of the month, the monsoon was active over northwest India, the central parts of the country, Gujarat and Saurashtra and Kutch. According to press reports, the water level in the river Narbada rose and submerged

the Bombay-Agra national highway near Indore. Another low pressure area appeared over Orissa and the neighbourhood on 7th and intensified into a land depression on the 10th morning with its centre about 100 km to the northeast of Angul in Orissa. Moving slowly westwards till 14th and northwestwards thereafter, it lay over northwest Madhya Pradesh with its centre about 100 km to the north of Indore on 15th morning. It weakened and merged in the seasonal trough on 16th. Under its influence there was widespread rain over the belt extending from Gangetic West Bengal and Orissa to Rajasthan and Saurashtra and Kutch between 10th and 16th. Very heavy rain was reported from some places in Gangetic West Bengal, south Madhya Pradesh, Vidarbha, Gujarat and Saurashtra and Kutch. According to press reports, continuous rain in West Bengal caused serious floods which destroyed about 200,000 tons of paddy grown on 357,000 acres of land. The abnormally heavy rainfall in the central parts of the country led to unprecedented floods in the rivers Tapti and Godavari. Swollen waters of the Tapti recorded an all time flood-mark of 102.3 ft, breached the walled town of Surat and submerged nearly three-fourths of the town under water. Seventyone people were reported to have been killed. Floods in the Godavari were reported to have affected standing crops in an area of 50,000 acres in East Godavari district and 125,000 acres in West Godavari district. The total loss was estimated to be about 3 crores of rupees.

With the dissipation of the depression, described above, the axis of the monsoon trough shifted northwards and remained close to the foot of the Himalayas till 24th. The monsoon was weak over several parts of the country, rainfall being confined mostly to northeast India and in and near the Punjab-Kumaon hills during the third week of the month. A wet spell, nevertheless, occurred between 17th and 27th over most parts of the Peninsula in association with a trough of low pressure which appeared over

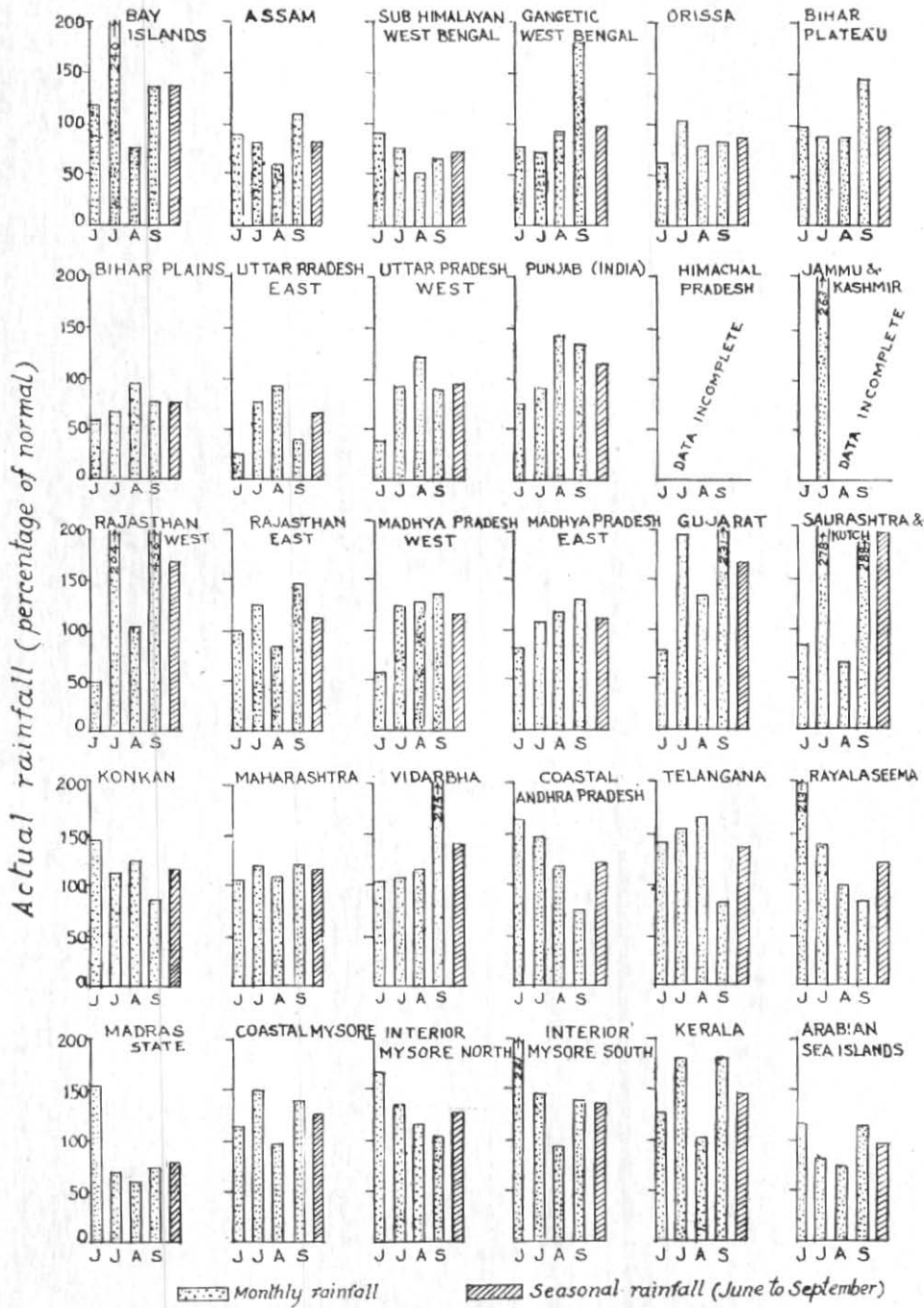


Fig. 2. Progress of the monsoon month by month—1959

the south Peninsula on 17th and shifted slowly westwards over the east central Arabian Sea.

A depression formed in the central and the adjoining areas of the northwest Bay of Bengal with its centre on the morning of 28th near Lat. 18°N and Long. 89°E . Moving northnorthwestwards, it intensified into a severe cyclonic storm of small extent on 30th morning when it was centred about 250 km south of Calcutta. Thereafter, it took a northwesterly course, crossed the coast near Balasore on the morning of 1 October and gradually weakened into a low pressure area by 3rd. In association with this severe cyclonic storm, widespread rain with locally very heavy falls occurred in Gangetic West Bengal and the adjoining areas of Bihar between 1 and 4 October and in Orissa on 1st. According to press reports the cyclonic storm caused gales and very heavy rain and widespread floods in many districts of West Bengal, Bihar and Orissa resulting in considerable loss of property and disruption of telecommunications and power supply. Several people were killed and large tracts of paddy fields were submerged under water. It was also reported that the low lying areas in the city of Calcutta were heavily flooded for two days paralysing traffic and throwing life in that city out of gear.

The month of September closed with the monsoon activity persisting almost through-

out the country while normally it should have withdrawn by the end of that month from northwest India, west Uttar Pradesh, west Madhya Pradesh, Saurashtra and Kutch, Gujarat and the north Konkan.

The total rainfall for September was generally in excess over the country outside Uttar Pradesh, Bihar Plains, Andhra Pradesh and the Madras State where it was in defect.

The monsoon withdrew from Jammu and Kashmir, Himachal Pradesh, the north Punjab (I) and west Rajasthan on 8 October and from east Rajasthan, the south Punjab (I) and Uttar Pradesh on 13 October and by 18 October, it withdrew from the whole country.

The total rainfall during the monsoon season as a whole was in large excess in west Rajasthan, Gujarat and Saurashtra and Kutch, in moderate excess in the Bay Islands, Vidarbha, Andhra Pradesh, the Mysore State and Kerala and in slight excess in the Punjab (I), east Rajasthan, Madhya Pradesh, the Konkan and Maharashtra. It was in slight to moderate defect in Assam, Sub-Himalayan West Bengal, Orissa, Bihar Plains, east Uttar Pradesh and the Madras State and normal elsewhere over the country. Data for Jammu and Kashmir and Himachal Pradesh are incomplete.

The progress of the monsoon over the various subdivisions of India month by month, is shown in Fig. 2.