AVIATION

Aeroplane Altitude Records

\[
\begin{array}{ll}
\text{Height (ft.)} & \text{Aviator} \\
41,795 & 1929 \ldots \text{W. Neuenhofen (Ger.)} \\
43,166 & 1930 \ldots \text{A. Soucek (U.S.A.)} \\
43,976 & 1932 \ldots \text{C. F. Unwins (Eng.)} \\
44,319 & 1933 \ldots \text{G. Lemoine (France).} \\
47,352 & 1934 \ldots \text{R. Donati (Italy).} \\
47,806 & 1935 \ldots \text{V. Kokkinaki (U.S.S.R.)} \\
49,994 & 1936 \ldots \text{S. R. D. Swain (Eng.)} \\
53,937 & 1937 \ldots \text{F. L. Adam (Eng.)} \\
56,046 & 1938 \ldots \text{M. Pazzi (Italy).} \\
59,445* & 1948 \ldots \text{J. Cunningham (Eng.)} \\
79,494 & 1954 \ldots \text{Major William Bridgeman (U.S.A.)} \\
65,889* & 1955 \ldots \text{Walter F. Gibb (Eng.)}
\end{array}
\]

Endurance Flight Record

\[
\begin{array}{llll}
\text{Hr.} & \text{Min.} & \text{Year.} & \text{Aviator} \\
150 & 40 & 1929 & \text{Carl Spaatz (U.S.A.)} \\
246 & 43 & 1929 & \text{Mendell & Reinhart (U.S.A.)} \\
555 & 41 & 1930 & \text{J. & K. Hunter (U.S.A.)} \\
647 & 4 & 1930 & \text{Jackson & O'Brine (U.S.A.)} \\
653 & 34 & 1935 & \text{Al & Fred Key (U.S.A.)} \\
1,124 & 14 & & \text{Jongeward & Woodhouse (U.S.A.)}
\end{array}
\]

World Air Records

\text{Maximum Speed over a straight course—1,132.136 mph—L. P. Twiss (Eng.) March 10, 1956.}

\text{Maximum Speed over a closed circuit—728.114 mph—Robert O. Rahn (U.S.) Oct. 10, 1953.}

\text{Distance Actual—11,235,6 miles, J. D. Davis U.S.N. E. P. Rankin (U.S.N., etc., Sept. 2—Oct. 1, 1946.}

\text{Distance, Closed Circuit—8,854.3 miles; O. F. Las-iter & W. J. Valentine, U.S. Aug. 1—3, 1947.}

\text{Altitude—65,889 (jet propellled)—Walter F. Gibb (Eng.), Aug. 29, 1955.}

\text{FASTEST TRIPS ROUND THE WORLD}

\text{1924 (April 6—Sept. 28)—Six U.S. Army fliers first round the world—26,345 miles in 175 days. Total flying time 365 hrs. 7m.}

\text{1931 (June 23—July 1)—Wiley Post & Harold Gatty—15,128 miles in 3 days, 19 hrs. 8 m. 10 s.}

\text{* Jet-propelled aircraft}
1933 (July 15-22)—Wiley Post's solo flight—15,596 miles in 7 days, 18 hrs. 49.5 m.
1938 (July 10-13)—Howard Hughes with a crew of 4—14,824 miles in 3 days, 19 hrs. 10 s. 8 m 10 s.
1947 (Apr. 12-16)—W. P. Odom (solo)—20,000 miles in 78 h. 55 m. 12 s.
1949 (Feb. 26—March 2)—James Gallagher & U.S. crew (First non-stop flight)—23,452 m. in 94 hrs. 1 min.
1957 (Jan. 16-18)—Three USAFB-52 strat fortresses First non-stop global flight by jet planes—24,325 m. in 45 hrs. 19 m.

BALLOON RECORDS

<table>
<thead>
<tr>
<th>Altitude</th>
<th>Year</th>
<th>Balloonists</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>1783</td>
<td>Pilatte de Rozier (France).</td>
</tr>
<tr>
<td>51,707</td>
<td>1931</td>
<td>Auguste Piccard (Swiss).</td>
</tr>
<tr>
<td>61,237</td>
<td>1933</td>
<td>T. G. W. Settle &amp; C. Fordney (U.S.).</td>
</tr>
<tr>
<td>72,394 g</td>
<td>1935</td>
<td>A. W. Stevens &amp; Anderson (U.S.).</td>
</tr>
<tr>
<td>96,000</td>
<td>1957</td>
<td>J. W. Kittinger (U.S.).</td>
</tr>
<tr>
<td>202,000</td>
<td>1957</td>
<td>Major David Simons (U.S.).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Distance</th>
<th>Year</th>
<th>Balloonists</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>1783</td>
<td>Charles &amp; Robert (France).</td>
</tr>
<tr>
<td>1,120</td>
<td>1859</td>
<td>Johnwise.</td>
</tr>
<tr>
<td>1,896.8</td>
<td>1914</td>
<td>Hans Berliner.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Duration</th>
<th>Year</th>
<th>Balloonists</th>
</tr>
</thead>
<tbody>
<tr>
<td>87</td>
<td>1913</td>
<td>H. Kaulen (Germany)</td>
</tr>
</tbody>
</table>

Gliders

Duration—Charles Atger (France), April 2-4, 1952—56 hrs. 15 m.
Distance, Straight Line—R. H. Johnson (U.S.), 535.169 miles, Aug 5, 1951.
Altitude—William S. Evans (U.S.), Dec. 30, 1950—30, 100 ft

Parachute

Descent—Rene Michenaud (1932, France) jumped from an aeroplane at an altitude of 25,590 ft. in France.
Delayed Parachute jump—Vlentina Seliverstova (Russia) jumped from 23,295 ft. and did not open her parachute until she had fallen 20,777 ft. (1951).

Women's Flight Records

Altitude—Mlle. Hilz (France)—46,948.725 ft. on June 23, 1936.
Speed—Jacqueline Auriol (France)—715.35 m.p.h. in turbojet fighter on May 31, 1955.
First Woman Trans-Atlantic Solo Flight—Amelia Earhart (U.S.A.), approximately in 15 hrs. on May 20-21, 1932.

Helicopter Records

Distance Airlne—Army HZI helicopter in first transcontinental flight 2,610 m. in 37 hrs. on Aug. 24, 1956.
Altitude—Jean Boulet (France)—26,931 ft., 1955
Maximum Speed—Ry L. Andersson & R. S. Decker (U.S.A.)—162.743 m.p.h., Nov. 11, 1956.
Speed, closed course (1,000 k.m.)—C. E. Hargett & E. D. Hill (U.S.A.)—141,915 m.p.h., July 12, 1956.
Speed for 1,000 k.m. (closed circuit)—Capts. C. E. Hargett & E. D. Hill (U.S.A.)—132,633 m.p.h., July 12, 1956.

LABOUR IN INDIA

LABOUR REFORM IN INDIA—India Government’s effort to afford protection to labour had a strange origin. Legislation prior to 1818 attempted merely to regulate conditions of labour so as to help the employers and to ensure that they had a docile labour force at their disposal. The Factory Acts of 1818 and 1891 were passed chiefly because of the anxiety caused to Lancashire by the growing cotton industry of Bombay.

For 20 years after 1891, there was no further advance. In 1911, new Factories Act was passed restricting the hours of work in textile factories to 12.

The period after World War I was an era of progressive labour legislation. The Trade Union movement was born and India’s association with I.L.O. supplied a powerful urge in favour of humane condition in mines, factories and mills. In 1922 the Indian Factories Act was amended so as to embrace many more factories, and working hours were reduced to a maximum of 11 hours per day. The Mines Act was similarly amended in 1923 providing for limitation of hours to 60 per week above ground and to 24 per week below ground. It also prohibited employment in mines persons under 13 years of age. A Workman’s Compensation Act providing for accidents sustained or disease contracted by workmen, was also passed in 1923. Government’s anxiety to preserve industrial peace led also to the enactment of Indian Trade Union Act, 1926 as well as Trade Disputes Act, 1929.

The post-war depression and the resultant industrial unrest paved the way for the Government for taking a deeper interest in labour problem. A Royal Commission on Labour in India was appointed in 1929 under the presidency of Rt. Hon. J. H. Whitley.

Between 1931 and the advent of provincial autonomy in 1937, the
Central Government effected a number of reforms revising or enacting legislation regarding factory works, miners, plantation labour, railway-men, maritime workers, dock labourers, etc., in the light of the recommendations of Royal Commission on Labour. Perhaps the most advanced social legislation of this period was the enactment of the Payment of Wages Act in 1936.

Quickened interest in labour reform was shown by new autonomous Provincial Governments which came into being in 1937 and which instituted a number of enquiries and enacted a series of legislative measures for amelioration of the working classes. But when the Congress Governments resigned in 1939, there was an end to this progress in the provinces. War years 1939—45 were a remarkable expansion of Indian industries and unparalleled rise in employment. At the same time, industrial relations were subjected to increasing strain. There were numerous struggles in respect of wages, dearness allowance, bonus and sharing of war profits. Direct action was resorted to by workers all over the country. Inflation and scarcity of foodstuffs, cloth and other consumer goods, the bleak prospect of unemployment owing to demobilization and retrenchment helped to strain the feelings between employers and employed. Added to these was the new-born political consciousness among the workers.

With the advent of independence, the labour unrest was greatly intensified and the National Government began to overhaul the entire machinery of labour, so as to stabilize industrial tranquility. The Government’s statement on industrial policy made in Parliament on April 8, 1948, recognized “the proper role of labour in industry and the need to secure for labour the wages and working conditions.” It urged that “Labour for its part must give equal recognition to its duty in contributing to the increase in the national income without which a permanent rise in the standard of living cannot be achieved.”

LABOUR LAWS

The Labour Legislation can be divided into following heads:—

1. Factories—All the Factories Acts from 1881 to 1947 have been annulled and a new act called the Indian Factories Act of 1948 has been passed. The main provisions of the Act are as follows:—
(1) It covers all industrial establishments employing 10 or more workers where power is used and 20 or more workers where power is not used. (2) It does away with the distinction between seasonal and perennial factories. (3) Elaborate provisions have now been made which specify in clear and precise terms the requirements in regard to health, safety and welfare. (4) The minimum age for employment of children has been fixed at 14 and the upper age-limits of the adolescents have been raised from 17 to 18. (5) The hours of works for adults have been fixed at 48 hours a week and
9 hours a day. The spreadover has been fixed at 10½ hours in a day. (6) For children and adolescents, the hours of work are 4½ hours a day and the spreadover has been fixed at 5 hours. (7) No adult worker is allowed to work more than 5 hours unless he has had an interval for rest of at least half-an-hour. (8) Employment of children and women at night is prohibited. (9) For overtime work the Act provides that employees shall be paid twice their normal rates of wages. (10) Besides weekly holidays, every worker is entitled to leave with wages after 12 months' continuous service at the following rate—Adult: one day for every 20 days of work, subject to a minimum of 10 days. Children: one day for every 15 days of work, subject to a minimum of 14 days.

In 1952 Indian Mines Act has been passed which consolidates the previous law and brings it in tune with the provisions of the Factories Act of 1948. (a) The Act applies to all mines. A mine has been defined as "any excavation where operation for the purpose of searching for or obtaining minerals has been or is being carried on." (b) Hours of all.

2. Mines—In 1952 Indian Mines Act was passed which consolidated the previous law and brought it in tune with the provisions of the Factories Act of 1948. (a) The Act applies to all mines. A mine has been defined as "any excavation where operation for the purpose of searching for or obtaining minerals has been or is being carried on." (b) Hours of all employees, both surface workers and underground workers are fixed at 48, and no worker is allowed to work more than nine hours a day on the surface or eight hours a day below the surface. (c) No person employed in a mine is allowed to work more than six days a week. (d) The Act prohibits the employment of children below the age of 15 and no person below the age of 17 shall be allowed to work underground unless he has been certified to be medically fit. The other principal enactments in this sphere since 1934 are: Coal Mines Safety (Stowing) Act, 1939; Mines Maternity Benefit Act, 1941; Mica Mines Labour Welfare Fund Act, 1948; Coal Mines Labour Welfare Fund Act, 1947 and Coal Mines Provident Fund and Bonus Schemes Act, 1948. Coalmines Bonus Scheme came into operation in 1947. Under this Scheme the worker, by virtue of a minimum qualifying rate of attendance, is entitled to receive a third of his basic earnings as bonus.

3. Plantations The important legislation regarding plantation labour is the Tea Districts Emigrant Labour Act XXI of 1932. The Act deals mainly with the recruitment of workers for the gardens in Assam. The main provisions are—(1) Every emigrant labourer and his family have a right of repatriation at the cost of the employer after the expiry of three years. (2) Provincial Governments are empowered to declare any area to be controlled emigration area. (3) Appointment of a Controller of Emigrant Labour. (4) No children below 16 years can proceed to Assam unless accompanied by parents or relatives or in the case of married women, unless accompanied by their husbands. Plantation Labour Act of 1951 which applies to all tea, coffee, rubber or cinchona plantations on which 30 or more persons are employed, fixes a 54-hour week for adults and 40-hours week for
adolescents and children and prohibits employment of children under 12 and night work for women and children between 7 p.m. and 6 a.m. It also provides for regulations relating to matters like leave facilities, health and welfare, housing accommodation, sickness and maternity benefits.

4. Transport—Prior to 1937, legislation relating to conditions of work in communications was limited to railways and port services. These related mainly to amendments to the Indian Railways Act 1890, to implement the Hour of Work (Industry) Convention (No. 1) 1919, amendments to the Indian Ports Act, 1908, to prohibit the employment of children in handling goods in ports, and the enactment of Indian Dock Labourers Act, 1934, regulating safety in docks and to implement the Protection Against Accidents (Dockers) Convention (Revised) (No. 39) 1932. Since 1937 both the scope and the content of the protective labour legislation in this sphere have been greatly extended. The more important of the measures adopted are the raising of the minimum age for employment of children in railways and docks from 12 to 15 years, the progressive extension of the Hours of Employment Regulations to all railways, the regulations adopted to promote the continuous employment of dock workers and elimination, as far as practicable, of the evils of casual employment, and the extension of the principle of statutory regulation of working conditions to workers engaged in motor transport.

5. Legislation Relating to Workers in Shops and Commercial Establishments—Granting of protection to workers in shops and commercial establishments was first taken by the Government of Bombay which passed an Act in 1939. Other States such as Bengal and Punjab followed suit and passed similar Acts in 1940. The Punjab Act was extended to Delhi in 1942. During 1947 Acts on the subject were passed in three more provinces, namely, Madhya Pradesh, Uttar Pradesh and Madras. In Assam a Shops and Establishments Act was passed in 1948. Apart from these provincial Acts there is a Central Act known as Weekly Holidays Act, 1942. This Act is permissive in character and provides for the grant of weekly holidays to shopworkers in those provinces which have no legislation on the subject. All the above Acts fix the daily and weekly hours of work. The Acts also fix the holidays and leave. With the exception of the Bengal Act, all other Acts have placed restrictions on the employment of children and have made special provisions relating to hours of work, rest intervals, etc., of young persons. All the Acts contain provisions for regulating the payment of wages. The Working Journalists (Conditions of Service) and Miscellaneous Provisions Act of 1955 contains provisions pertaining to the hours of work, weekly day of rest and leave with pay.

6. Safety and Welfare—(1) In Factories Act, 1948, the Mines Act, 1952 and the Plantations Labour Act, 1951 provisions have been made for canteens, creches, rest shelters, washing facilities, medical aid for the appointment of labour officers. (2) Indian Dock Labourer’s Act, 1934 came into force in 1948. The Act is concerned with the protection against accidents of workers
employed in loading and unloading of ships. (3) The Coal Mines Safety (Stowing) Act of 1939 provides for the creation of a fund to assist stowing measures. According to the Act the expenses of the Fund are to be met by an excise duty and its administration is entrusted to a Coal Mines Stowing Board. The Act empowers Chief Inspector and Inspectors of Mines to require the owner, agent or manager to take necessary protective measures. (4) For permanent financing the welfare schemes, several Acts, such as, Coal Mines Labour Welfare Fund Act, 1947, Mica Mines Labour Welfare Fund Act, 1946, U.P. Sugar and Power Alcohol Industries Welfare Fund Act, 1953 and Bombay Labour Welfare Fund, 1953 have been passed. Coal Mines Labour Welfare Fund Act, 1947 provides for the setting up of a Fund to be called the Coal Mines Labour Housing and General Welfare Fund which will maintain two accounts, namely, the Housing Account and General Welfare Account. The Fund maintains two central hospitals—one at Dhanbad and the other at Asansol—four regional hospitals and several dispensaries. The Fund also runs adult education centres, women's welfare centres, etc. (5) Mica Mines Labour Welfare Fund, 1946 provides for the raising of a Fund by the levy of an ad valorem customs duty on all mica exported from the Indian Dominion for the construction of hospitals, mobile medical units, maternity and child welfare centres, the provision for technical education for miners' children, etc., etc. The fund provides medical, educational and recreational facilities for mica mine workers. A 50-bed central hospital has been functioning at Karner (Bihar) since 1954. The Fund also maintains several primary schools. Under the Plantations Labour Act, 1951, all plantations are required to provide housing accommodation to their resident workers and families and to maintain hospitals and dispensaries.

Besides above, Labour Welfare Funds were created on a voluntary basis in 1946 for financing welfare activities for the benefit of workers. There are at present 200 such funds in the country. The State Governments are running a number of Welfare Centres.

7. Wages—The first Act is the Payment of Wages Act of 1936. This Act seeks only to ensure the regular payment of wages and to prevent the exploitation of the wages earner by arbitrary deductions and fines; it does little to help the worker with no bargaining power to secure a living wage. This need has been filled by the Minimum Wages Act.

The wages of the labourers are regulated by the Payment of Wages Act, 1936 and the Minimum Wages Act, 1948. The first Act applies to persons employed in any factory and in any railway in respect of wages and salaries which average below Rs. 400 per month. The provisions of the Act have been extended to mines, plantations, certain classes of State transport and construction industry. The Minimum Wages Act empowers the Government to fix minimum rates of wages to employees in industries specified in the Schedule of the Act. According to an Amendment of 1957, all categories of workers including those working in agriculture are required to be brought under this Act by 1957.

Coal Mines Bonus Schemes—Bonus schemes, framed under Sec-
tion (5) of the Coal Mines Provident Fund and Bonus Schemes Act, 1948, are in operation in the coal mines of West Bengal, Bihar, M. P., Bombay, Orissa, Andhra Pradesh, Rajasthan and Assam, which entitle a worker to receive a third of his basic earnings as bonus by virtue of a minimum qualifying attendance during a quarter.

Standardisation of Wages—Wage Boards have been set up in Bombay under the Bombay Industrial Relations Act, 1946 to standardise wages.


With a view to providing long-term security through establishment of compulsory provident funds for industrial workers, Employees’ Provident Fund Act of 1952 was passed which provides for the compulsory provident fund for employees in 30 industries, employing 50 or more workers and all workers with monthly earnings of Rs. 300 or less are required to make a minimum contribution of 6\% p.c. of their income.

Coal Mines Provident Fund and Bonus Schemes Act of 1948 provides for the compulsory provident fund scheme for colliery workers. Under these Schemes the workers are required to contribute to the Fund about 6\% p.c. of their basic wages and dearness allowance inclusive of food concessions in cash or kind. A similar amount is contributed by the employer. This scheme is in operation in the coal mines of West Bengal, Bihar, Madhya Pradesh, Orissa, Andhra Pradesh, Bombay and Assam.

The only Central Act regarding maternity welfare is the Mines Maternity Benefit Act of 1941. It applies to women employed in mines covered by the Indian Mines Act.

The Maternity Benefit Acts have been passed in almost all the States. The main principles in all Maternity Benefit legislations are the same—provision for the payment of a cash benefit to women for specified periods before and after childbirth, a compulsory period of rest after delivery and also before delivery if notice is given. All Acts specify a qualifying period for the earning of the benefit, this varies from six months to a year. There are three Central Acts regarding maternity benefits, namely, E. S. I. Act 1948, Mines Maternity Benefit Act and Plantations Labour Act which also regulates payment of maternity benefits.

The most important of social security acts is the Employees’ State Insurance Act of 1948 which provides for the compulsory insurance of a specified class of wage-earners against the risks of sickness, maternity and employment injury. The Act applies to all perennial factories using power and employing 20 or more persons. It covers labourers employed directly or indirectly and also clerical staff;
it does not apply to a person whose total remuneration exceeds Rs. 400 per month. It excludes armed forces personnel.

The scheme is administered by the Employees' State Insurance Corporation consisting of Government representatives, employees and workers, the medical profession and the Central Legislature. A Medical Benefit Council, consisting of 28 members, advises the Corporation on medical benefits. The executive head of the Corporation is a Director-General who is assisted by four officers. He functions through a network of regional and local offices.

Finance—Every employer and worker is required to make, for each week during the whole or part of which the worker is employed, weekly contributions to the Fund according to the scale prescribed in the Act; the weekly contribution (employers' and employees') rising from seven annas in the case of employees whose average daily wages are below one rupee to three rupees twelve a gazas in the case of those whose daily average wages are eight rupees and above. Employees whose average daily wages are below one rupee are, however, exempted from contributing to the Fund out of their wages, the entire contribution in their case being recoverable from employers.

The benefits provided under the Act are—(1) Sickness Benefit, (2) Maternity Benefit, (3) Disablement Benefit, (4) Dependents' Benefit and (5) Medical Benefit.

The scheme is in operation in Delhi, Calcutta, Howrah, and also in 9 industrial centres of Andhra Pradesh, 4 in Bombay, 5 in Kerala, 5 in Madhya Pradesh, 5 in Madras, 7 in Punjab, 6 in Rajasthan and 4 in Uttar Pradesh. At present the scheme covers more than 11 lakh workers.

9. Industrial Relations and Industrial Disputes—In a democratic country, the workers have the right to strike work if they do not receive wages which they consider fair or adequate; similar, employers have the right to declare a lock-out if they are not satisfied with the work of the labour. But the Government cannot be indifferent to the manner in which these rights are exercised. Since industrial peace is vital for economic progress, there are specific laws to deal with employer-worker disputes. These are governed by the Industrial Disputes Act of 1947 and amended in subsequent years. The Act provides for different kinds of machinery to deal with different situations. There are, for instance, Works Committees composed of representatives of employers and workers to remove day-to-day differences by mutual discussion. Then there are Conciliation Officers and Conciliation Boards to bring about a settlement between the parties, if a dispute has arisen. But if their efforts fail, there is provision for compulsory arbitration.

The Act specifies three types of tribunals: Labour Courts, Industrial Tribunals and National Tribunals. The Labour Courts have jurisdiction to adjudicate upon disputes relating to such matters as the propriety or legality of an order passed by an employer, the discharge or dismissal of employees and the legality or otherwise of a strike or lock-out. An Industrial Tribunal will adjudicate on disputes concerning wages, hours of work, bonus and retrenchment. A
National Tribunal will deal with matters which, in the opinion of the Central Government, involve questions of national importance or which are of such a nature that establishments in more than one State are likely to be interested in or affected by the disputes.

Where an existing or apprehended dispute has been referred to any of the bodies enumerated above, the Central or the State Government can, by order, prohibit the start or continuance of any strike or lock-out arising from such dispute. If persisted in, such strike or lock-out will be illegal.

A provision has been made in the Industrial Disputes Act for voluntary reference of disputes to arbitration by the parties themselves by written agreement and for enforcement of voluntary agreements reached between the parties.

10. Miscellaneous—(1) The Children (Pledging of Labour) Act II of 1933 lays down that any agreement to pledge the labour of a child below fifteen years by the parent in return of any payment or benefit will be null and void and the parent is liable to be fined upto Rs. 50 and the employer upto Rs. 200. (2) The Employment of Children Act XXVI of 1938 prohibits the employment of children below the age of 15 in any occupation connected with the transport of passengers, goods or mails by railway or in any occupation involving the handling of goods within the limits of any port regulated by the Indian Ports Act, 1908. No child who has not completed his 12th year can be employed in any of the scheduled occupations, i.e., bidi making, carpet making, cement manufacture, cloth printing, dyeing and weaving, manufacture of matches, explosives and firework, match cutting and splitting, shellac manufacture, soap manufacture, tanning and wool spinning. (3) The prudency of well-coordinated labour statistics in India has been the subject of adverse comment for a long time. So the "Inland Statistic Act of 1942 was passed. The Act empowers the State Governments to collect statistics on (a) any matter relating to factories and (b) price of commodities, attendance, living conditions, indebtedness, rents of dwelling houses, wages and other earnings and provident and other fund benefits and amenities, hours of work, employment and unemployment, industrial and labour disputes. The Act empowers the Statistics Authority to call for required returns and examine the relevant records, etc., and penalties have been provided for non-submission. (4) Legislation relating to indigent has been enacted from time to time to deal with problems incidental to the indebtedness of industrial workers. The provisions of these are as follows—(a) C. P. Code of 1908 was amended in 1937 to provide for the exemption of attachments of salaries of all workers getting less than Rs. 100 per month and in the case of Government employees the first Rs. 100 and the moiety of the remainder. It also limits the period of continuous attachment and provides that if a worker's salary has been attached for a period of 24 months, it should remain immune from liability of further attachment for a period of one year. (b) C. P. Code of 1908 was again amended in 1936 to prevent imprisonment of debtors. (c) Punjab Government has an Act known as Punjab Relief of Indebtedness Act of 1936. (d) C. P.
Government passed an Act known as the Adjustment and Liquidation of Industrial Workers' Debt Act of 1936. (e) Bengal Government passed an Act known as Bengal Workmen's Protection Act of 1934 which provides that any person loitering at or near any factory, workshop, etc., with a view to recovering debts from persons employed would be liable to fine or imprisonment. (f) M. P. Government passed an Act called C. P. Protection of Debtor's Act, which is more or less on the lines of Bengal Act. (g) Madras Government passed a similar legislation in 1941. (h) Bihar Workmen's Protection Act was passed in 1918 to protect certain classes of workmen from the molestation and intimidation by their creditors.

LABOUR ADMINISTRATION

The administration of labour laws is a divided responsibility. The Central Government, through its various offices, administers labour laws applying to mines, railways and other Central undertakings. The rest of the labour laws are administered by the State Governments through their own organisations.

Under the Indian Constitution, the following subjects may be legislated concurrently by the Central and State legislatures—(1) Trade Union, industrial and labour disputes, (2) Social Security and Social Insurance, employment and unemployment, (3) Welfare of labour including conditions of work, provident funds, employers' liability, workmen's compensation, invalidity and old age pensions, maternity benefits, (4) Vocational and Technical Training of labour, (5) Relief and rehabilitation of refugees.

The following subjects fall exclusively under the jurisdiction of the Union and the States.

Union List—(1) Regulation of labour and safety in mines and oilfields, (2) Industrial disputes concerning Union employees.

State List—Relief of disabled and unemployed.

Ministry of Labour and Employment—The activities of the Government of India regarding labour is controlled by the Ministry of Labour and Employment. The Ministry deals with the following subjects—(i) Labour Welfare (ii) Industrial and Labour Disputes (iii) Factory Labour (iv) Unemployment Insurance and Health Insurance, etc., (v) Labour employed in Railways, Major ports, mines and oilfields (vi) Resettlement of demobilised soldiers and discharged war-workers (vii) Participation in the International Labour Conference and work connected therewith.

As regards subjects (i) to (iv), the Ministry is only responsible for laying down the general policy of the whole of India, while the implementation of the policy relating to these subjects is entirely the responsibility of the State Governments concerned, though the Central Government has power to exercise control and give directions.

The following are the Attached Offices of the Ministry.

(1) Office of the Director-General, Employees' State Insurance Corporation, New Delhi is a quasi-government institution to administer the Employees' State Insurance Act. It was network of regional offices throughout the country.
(2) Office of Director, Labour Bureau, Simla—The Bureau was set up in October, 1946 and has been responsible for (1) collection of labour statistics, (2) maintenance of cost of living index numbers, (3) keeping up-to-date the factual data relating to working conditions collected by the Labour Investigation Committee, (4) conducting research into specific problems with a view to furnishing data required for the formation of policy, (5) editing the monthly Indian Labour Gazette, (6) compiling Labour Code of various legislative enactments and the statutory rules thereunder and a Labour Year Book.

(3) Office of the Directorate-General of Resettlement and Employment. The office was set up in 1915 to assist the demobilised personnel in their resettlement in civil life from the army. After war to the scope and activities of this office were extended to cover other categories.

(4) Office of the Chief Labour Commissioner, New Delhi—The organisation deals with (1) conciliation, (2) examination of welfare measures, and advice to the employees and Government in connection therewith, (3) operation of labour laws to the extent of Central responsibility, (4) to organise and set up canteens in all Government and civil establishments, besides offering advice to State Governments, States and Administrations. There are six regional offices under the control of the Chief Labour Commissioner.


(6) Office of the Chief Inspector of Mines, Dhanbad—The activities of this Department are (a) enforcement of the Indian Mines Act, (ii) inspection of mines, (iii) investigation of accidents, (iv) inspection of electrical installations and machinery, (vi) technical advice to mine owners, (vi) prosecutions, (vii) collection of statistics and (viii) enforcement of the Mines Maternity Benefit Act, 1941.

(7) Office of the Chief Adviser of Factories, New Delhi—This office deals with (a) training of Factory Inspectors and Safety Officers, (b) industrial health, survey of toxic hazards, (c) environmental problems in factories, (d) studies relating to productivity and work methods, (e) housing of industrial labour and administration of safety measures, (f) health and welfare schemes under the Dock Workers (Regulation of Employment) Act, (g) assistance in all matters relating to construction, design and lay-out of factories, (h) matters relating to the working conditions such as lighting, ventilation, control of dust and fumes, accident prevention and other safety precautions, welfare, amenities, collection of up-to-date information in respect of safety, health and welfare of industrial workers in order to disseminate such information in the form of brochures, pamphlets, posters, charts, etc.

(8) Office of the Controller of Emigrants Labour, Shillong—The office deals with (a) interpretation of the Tea Districts Emigrant Labour Act, 1932 and the Rules, (b) recruitment, repatriation of labour and inspection of tea gardens and depots, (c) compensation
cases relating to persons belonging to provincial Civil Labour units and State Labour units who worked on Defence projects.

(9) **Offices of the Welfare Commissioners, Mica Mines Labour Welfare Fund, Dhanbad and Nellore.**

(10) **Office of the Coal Mines Provident Fund Commissioner, Dhanbad**—The organisation was set up in 1948 for (a) administration of Coal Mines Bonus Scheme, (b) administration of Coal Mines Provident Fund Scheme which has been formed under Coal Mines Provident Fund and Bonus Schemes Act, 1948.

(11) **Office of the Central Provident Fund Commissioner, New Delhi** is responsible for the collection of amounts due to the Fund from employers and the payment of claims due to workers.

**TRADE UNIONISM IN INDIA**

The passing of the Indian Trade Unions Act of 1926 (also amended in 1947), conferred a legal and corporate status on registered trade unions and granted them certain immunities in regard to trade disputes. The Act makes provision for three matters:—(1) conditions governing the registration of trade unions, (2) the obligations to which a trade union is subject after registration and (3) the rights and privileges accorded to registered unions. The act also allowed the funds of the registered unions to be spent for the conduct of trade disputes and for the provision of benefits to its members.

Under the Trade Unions Act of 1926, the registered trade unions are required to submit annual returns to the Registrars of Trade Unions. It is the responsibility of the Registrar of Trade Unions in the State to scrutinise these returns and to prepare a report thereon.

There are at present four Central all-India Trade Union organisations in India: **The Indian National Trade Union Congress, the All India Trade Union Congress, the Hind Mazdoor Sabha and the United Trade Union Congress.** Though the general objective of these four organisations is the same, namely, to promote the economic, political, social and cultural interests of workers, they differ in regard to certain fundamental principles based on political attitudes. I. N. T. U. C. which was founded in May 1947, urges the placing of industry under national ownership and control in a suitable form and the securing of increasing association of workers in the administration of industry and their full participation in its control. However, it does not wish to adopt radical methods for achieving its objectives and believes in bringing about the change gradually, through democratic and peaceful means. Hind Mazdoor Sabha founded in 1948 stands for the establishment of a democratic socialist society. To achieve its objects, the H. M. S. is prepared to adopt all legitimate, peaceful and democratic methods. Both I. N. T. U. C. and H. M. S. thus appear to be wedded to democratic means to achieve their ends. The A. I. T. U. C. founded in 1920 and now dominated by the communists, strives to establish a socialist state in India (as against the democratic socialist society by the H. M. S.) and to socialise and nationalise the means of production, distribution and exchange. Its thesis is that labour and capital cannot be recon-
ciled within a capitalistic system and that trade unions are organs of class struggle. The United Trade Union Congress, which broke away in December, 1948, from A.I.T.U.C., has the aim to set up a trade union movement and build up a central platform of labour, free from the domination of political parties.

To a large extent, the present leadership of all-India organisations is in the hands of politicians and not in those of working classes. This has resulted in the absence, to a large extent, of genuine trade union leadership. The Indian Trade Union movement is also divided at the international level. I. N. T. U. C. and Hindi Mazdoor Sabha are affiliated to the International Confederation of Free Trade Unions, an organisation mainly supported by the Anglo American bloc; while A. I. T. U. C. is affiliated to the World Federation of Trade Unions supported by the Communist bloc.

Though these four national organisations dominate the Indian Trade Union movement, not all Trade Unions in India belong to them or follow their leadership. A very large number of small unions stand aloof from this leadership and a number of federations of Trade Unions prefer to operate as separate units, although they collaborate from time to time with one congress or another. The striking examples of these are Ahmedabad Textile Labour Association and National Federation of Indian Railwaymen.

Membership of All India Organisations

<table>
<thead>
<tr>
<th>No. of Unions</th>
<th>Membership</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>affiliated</td>
</tr>
<tr>
<td>L. N. T. U. C.</td>
<td>604</td>
</tr>
<tr>
<td>Hindi Majdur Sabha</td>
<td>157</td>
</tr>
<tr>
<td>A. I. T. U. C.</td>
<td>481</td>
</tr>
<tr>
<td>United Trade Union Congress</td>
<td>228</td>
</tr>
</tbody>
</table>

1,470 1,531 16,44,488 17,57,498

NATIONAL EMPLOYMENT SERVICE—Employment exchange, which was set up in 1945 to resettle demobilised personnel, were entrusted with the task of finding employment for displaced persons. The Exchange renders employment assistance to all grades and categories of employment seekers. The exchanges are run by the Directorate General of Resettlement and Employment of the Ministry of Labour. The exchanges give priority to the Scheduled Castes, Scheduled Tribes, retrenched Government servants, and displaced registrants in finding employment. Whenever possible, special facilities are provided for women.

The Employment exchanges have now been transferred to the State Governments that now administer exchanges and training centres. There are now 198 employment exchanges. The Central Government now limits its responsibilities to policy-making, co-ordination of procedure and standards and to the rendering of assistance wherever needed. There were 104 training centres under
the Craftsman Training Scheme at the end of December, 1957. The Central Training Institute for trained craftsman instructors is at Koni-Bilaspur (M.P.) and a second centre is being started at Aundh (Bombay). A National Council for Training of Vocational Trades has been set up to advise the Government of India on all questions of training policy, to co-ordinate vocational training and to lay down uniform standards. It also awards national certificates of proficiency to craftsmen. Another important event was the launching of the youth employment service and employment counselling.

INDIA AND THE I. L. O.—India has been an active member of the I.L.O. from its very inception in 1919 and is a permanent member of its governing body since 1922 and also a prominent member of the organisation as one of the ten leading industrial countries of the world. India has three members on the Governing Body at present. Her contribution to the finances of I. L. O. is also considerable, amounting to 5 p.c. of the total revenue of the Organisation.

The International Labour Conference, have so far ratified 107 conventions of which India has ratified 22 conventions.

India has been receiving technical assistance from I. L. O. since 1961 in the following field—(a) Social Security, (b) Training-within-industry (c) Vocational instructors (d) Employment service (e) Productivity.

The I. L. O. has set up an Asian Field Office at Bangalore in 1949. This office looks after the planning, implementation and critical evaluation of technical assistance programmes in the countries of Asia. A branch office of the I. L. O. was established in 1928 in New Delhi and has continued its existence without interruption ever since.

CENTRAL LABOUR INSTITUTE—The foundation stone of the Central Labour Institute was laid at Kurla, near Bombay, on Oct. 7, 1954. The Central Labour Institute aims at affording facilities for scientific study on various aspects of industrial development relating to human factor. It will consist of a museum of industrial safety, health and welfare, and industrial hygiene laboratory, a training centre and a library-cum-information centre. A National Productivity Centre has been set up in Bombay, which will become a part of the Central Labour Institute. The institute will be built up on a 13 acre plot at Kurla, Bombay. Government of India has made a capital grant of Rs. 10 lakhs for the construction of the main building. Under the operational agreement between U.S. Government and the Government of India, $100,000 has been made available for the purchase of plant, equipment and technical publications for the Institute.

AVERAGE DAILY NUMBER OF WORKERS EMPLOYED

| All Factors |  | 2,561,769 | 1951 | .. | 2,689,757 |
| 1950 | .. | 2,536,544 | 1955 | .. | 2,690,103 |
| 1952 | 2,567,163 | 1956 | .. | 2,882,309 |
| 1953 | 2,538,026 | 1957 (First half) | .. | 2,810,208 |

### AGRICULTURE IN INDIA

#### EMPLOYMENT EXCHANGE STATISTICS

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Registrations</th>
<th>Total Placings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1953</td>
<td>1,408,800</td>
<td>185,443</td>
</tr>
<tr>
<td>1954</td>
<td>1,465,497</td>
<td>162,451</td>
</tr>
<tr>
<td>1955</td>
<td>1,584,024</td>
<td>169,735</td>
</tr>
</tbody>
</table>

#### INDUSTRIAL DISPUTES IN INDIA

(Resulting in work-stoppages involving 10 workers or more)

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Disputes</th>
<th>No. of Workers Involved</th>
<th>Loss of Man-days</th>
<th>No. of Disputes</th>
<th>No. of Workers Involved</th>
<th>Loss of Man-days</th>
</tr>
</thead>
<tbody>
<tr>
<td>1945</td>
<td>820</td>
<td>747,530</td>
<td>4,054,499</td>
<td>1952</td>
<td>963</td>
<td>809,242</td>
</tr>
<tr>
<td>1946</td>
<td>1,619</td>
<td>1,961,948</td>
<td>12,717,762</td>
<td>1953</td>
<td>772</td>
<td>466,607</td>
</tr>
<tr>
<td>1947</td>
<td>1,811</td>
<td>1,840,784</td>
<td>16,562,666</td>
<td>1954</td>
<td>840</td>
<td>477,138</td>
</tr>
<tr>
<td>1948</td>
<td>1,811</td>
<td>1,050,120</td>
<td>7,837,173</td>
<td>1955</td>
<td>1,166</td>
<td>527,767</td>
</tr>
<tr>
<td>1949</td>
<td>920</td>
<td>686,457</td>
<td>6,600,595</td>
<td>1956</td>
<td>1,203</td>
<td>715,130</td>
</tr>
<tr>
<td>1950</td>
<td>814</td>
<td>719,883</td>
<td>12,806,704</td>
<td>1957</td>
<td>1,248</td>
<td>....</td>
</tr>
<tr>
<td>1951</td>
<td>1,071</td>
<td>691,321</td>
<td>3,818,928</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### AGRICULTURE IN INDIA

**Importance of Agriculture in India**—India is one of the leading agricultural countries in the world and one of the export centres of its wealth is its produce from land. It is the basic industry and provides employment to about 100 million people. It also contributes fifty per cent of our national income. In addition, a number of agricultural products are exported and earn valuable foreign exchange for the country. Some of our biggest industries, like sugar and textiles, depend on agriculture for raw materials.

The world position of Indian agriculture is indeed a big one. India enjoys a virtual monopoly in jute and leads the world in the production of groundnuts and tea. It is the second largest producer of rice, jute, tobacco, raw sugar, rapeseed, sesameum and castor-seed.

Cereals are the most important items of agricultural production, being grown on about 60 per cent of the cropped area. Rice accounts for about half of India's cereal output; the other half is accounted for by a variety of grains including wheat, millet and barley. In addition to cereal production, 18 per cent of India's total cropped area is devoted to pulses, gram and other food crops. Nevertheless, India does not produce sufficient food for its own needs. One of the major objectives of the Five-Year Plans is to make India self-sufficient in foodstuffs by bringing more land under production through irrigation and reclamation and by increasing productivity. Various com-
mercial crops are also significant. Oilseeds, cotton, sugarcane, tea, coffee, spices, rubber and jute are the most important. Such crops form the basis of some of major industries and are among the leading exports, either in raw or manufactured form.

DEFECTS OF INDIAN AGRICULTURE AND SHORTAGE OF FOOD—Indeed the defects of Indian agriculture become evident when the per acre yield of most crops in India is compared with that of foreign countries. The average yield per acre of agricultural products in India is comparatively poor. Average production of wheat per acre in India is about 700 lb., while it is 1,918 lb. in Egypt, 1,713 lb. in Japan, 898 lb. in China. As regards rice, production of India is about 750 lb. per acre, which is 3,444 lb. per acre in Japan, 2,908 lb. per acre in Egypt, 2,433 lb. per acre in China and 2,185 lb. per acre in U.S.A. This berpeaks the backwardness of India’s agriculture, which, by the way, is due no less to the growing lack of soil fertility as to the mediaeval technique of agriculture and an almost complete lack of capital to be employed in it. It may also be said that the production of food was outstripped by the growth of population. The partition of the country in 1947 and the consequent separation from India of the canal-irrigated areas of Sind and the Punjab and the lowlands of East Bengal not only aggravated the food shortage but also created an acute deficiency in jute and long and medium staple cotton. Indian agriculture has to contend with a notoriously capricious nature. Draughts alternating with devastating floods are a common occurrence in one part of the country or another. Moreover agriculture in India suffers from the impoverishment of soil and the fragmentation of holdings. All these drawbacks account for the poverty of the peasants and rural indebtedness.

AREA AND SOIL—The total area available for cultivation is 71.83 crore acres or 88.6 per cent of the total area. The total area cultivated annually is 30.24 crore acres. The cultivated area works out to 1.2 acres per head of the agricultural population. Forests cover 11.56 crore acres, while there are 5.52 crore acres of culturable waste land and 6.81 crore acre of fallow land.

Four main types of soil are (1) alluvial, (2) black, (3) red and (4) laterite. The first three are rich in potash and lime, but deficient in phosphoric acid, nitrogen and humus. The laterite soil possesses plenty of humus, but lacks most of the other chemical ingredients. The alluvial soil is the most fertile and easily worked and covers almost the entire Indo-Gangetic plain and the narrow coastal strips girdling peninsular India. Highly retentive of moisture and sticky, the black soil covers the western portion of the Deccan plateau, while the red soil covers the eastern part. The laterite soil is found in Central India, Assam and along the Eastern and Western Ghats.

In addition to four main groups of soils mentioned above, the desert soils of the sub-continent occupy a large tract in Rajasthan and the south Punjab. Rajasthan desert alone occupies an area of 40,000 sq. miles.
Saline and Alkali soils also form an important group of Indian soils. Such soils are characterised by a high degree of impermeability and stickiness together with high alkalinity and frequent presence of large excess of free salts. They are usually poor in nitrogen and humus and unsuitable for crop-growing without previous reclama-
tion. Forest soils occupy a large part of the sub-continent. These soils belong to brown earth and podsol groups. Marshy and peaty soils are found in coastal areas of Orissa and West Bengal, North-West Bihar, Almora district of U.P., South-East coast of Madras and in Travancore-Cochin.

CROPS—The two outstanding features of agricultural production in India are the wide variety of crops and the preponderance of food over non-food crops. There is hardly a crop of the tropical, sub-tropical or temperate zone, which is not grown in some part or the other of this country. Food crops occupy about 75 per cent of the total cropped area. There are two well-defined crop seasons; (i) kharif and (ii) rabi. The kharif crop is harvested in Nov. to Oct. 31 and rabi crop in May 1 to April 30. The major kharif crops include rice, jowar, bajra, maize, cotton, sugarcane, sesame and groundnut; the major rabi crops are wheat, barley, tea, gram, linseed, rape, mustard; and in South India, rice, jowar and cotton.

The seasons for individual crops are as follows—Wheat—Nov. to Oct.; Sugarcane—Nov. to Oct.; Cotton—Sept. to August; Jute—July to June; Tea—Jan. to Dec.; Coffee—July to June.

Classification of Crops of India—The crops of India are usually classified as follows:—(1) Food crops such as rice, wheat, barley, millets, pulses and gram, sugarcane and spices; Food crops occupy more than four-fifths of the cultivated land (2) Oilseeds such as linseed, rape and mustard, sesame, castor, groundnut and coconut; (3) Fibres such as cotton, jute, hemp and flax; and (4) Drugs and Beverages such as poppy, cinchona, tobacco, tea and coffee.

THE GOVERNMENT ORGANISATION ON FOOD AND AGRI-
CULTURE—This Ministry under the new nomenclature of Ministry of Food and Agriculture was set up in April, 1957. At present, the Department of Food is responsible for the following functions—(a) procurement of food grains for civil and military requirements (b) distribution of imported food grains to States (c) co-ordination, planning and guidance in regard to food policy from an all-India point of view (d) regulating import and export of food grains. The Department of Agriculture is responsible for the following broad functions—(a) agricultural production (b) agricultural research, education and extension (c) animal husbandry, fisheries and forestry (d) fruit and vegetable products industry (e) agricultural economics and statistics (f) agricultural development (g) liaison with Food and Agriculture Organisation of U. N. and other International Organisations (h) procurement and distribution of fertilizers (i) agricultural marketing (j) co-operation (k) land reclamation (l) agricultural minor irrigation (m) soil conservation.

AGRICULTURAL RESEARCH AND EDUCATION—Agricultural research and extension activities are carried out by the Indian
Council of Agricultural Research, the Central Research Institute and the Central Commodity Committees. Increasing attention is also paid by the Ministry to the improvement of facilities for training of technical personnel required for various agricultural development schemes as well as to agricultural education programme in general in the country.

The Indian Council of Agricultural Research is devoted to the aim of increasing agricultural production. The I.C.A.R. was set up in 1929 to promote, guide and co-ordinate research in the field of agriculture and animal husbandry throughout India and to link it with research in foreign countries. The Council’s Advisory Board consists of experts representing the States, the universities and scientific bodies; while the Governing Body is composed of State Ministers of Agriculture and the representatives of Parliament and commercial interests. The Council does not possess any research institution of its own, but sponsors agricultural research in cooperation with the State Governments in Central and State research institutions, universities and recognised private institutions. The Council mainly concerns itself with schemes of regional or all-India importance; I.C.A.R. is responsible for the dissemination of the results of the researches carried out in the fields of agriculture and animal husbandry. The finances of the I.C.A.R. are obtained from Government grants, contributions from other sources and the income from a cess of half per cent imposed on the exports of certain agricultural products specified in the Agricultural Produce Cess Act, 1940.

The Central Research Institutes are engaged on a variety of research projects, both fundamental and applied. They conduct extensive inquiries to improve the fertility of the soil, the quality of grass and grass lands. They have evolved certain varieties of crops which are capable of resisting draught, disease, insects and pests.

India’s largest agricultural research institute is at Delhi and is popularly known as Pusa Institute. The Indian Agricultural Research Institute was established by the Government of India on April 1, 1905 at Pusa. Conduct of fundamental and applied research and imparting of post-graduate training to students continue to be the chief activities of the Institute. The researches are conducted in Plant Chemistry and Soil Science, Entomology, Mycology, Plant Pathology and Agricultural Engineering. Central Rice Research Institute, Cuttack, carries on research in the field of breeding, agronomy, mycology, entomology and chemistry of rice. The multiplication of improved varieties of rice and experiments in green manuring and in new methods of transplantation are some of its other functions. The Institute has been selected by the F.A.O. as the venue for an international rice-breeding course. Central Potato Institute at Poona is engaged in evolving improved varieties of potatoes capable of giving high yields. Out of the five new regional centres planned to be set up for experimentation and trials on potatoes, three centres were established in 1958 at Babugarh, Jullundur and Nilgiris. A sub-station for multiplication of
disea e-free seed potatoes was also establihed at Mukteswar. The Central Vegetable Breeding Station at Kulu is experimenting on the adoption of European vegetable for Indian conditions. It is also investigating on self fertilised seeds and the manipulation of agricultural practices to secure increased production. Indian Institute of Sugar Technology at Kanpur was established in 1936 and is now maintained by the Indian Central Sugarcane Committee. It conducts research in different branches of sugar technology, renders technical assistance to factories and trains students. The Indian Institute of Sugarcane Research which was brought into being by the Indian Central Sugarcane Committee in 1922 at Lucknow, was taken over by the Central Government on 1st Jan, 1954. The scientific section of the Institute are Agronomy, Entomology, Mycology, Agricultural Engineering, Soil Science, Sugarcane Physiology and Gums and Khands in Research. The Sugarcane Breeding Institute, Coimbatore and its sub-station at Karur carry on valuable investigations. Forest Research Institute at Dehra Dun was opened in 1914 and is engaged in research on silviculture, forest botany, entomology, the succession, preservation and the technology of wood, timber, mechanics, cellulose and paper pulp chemistry and on main forest products. There is also another Forest College at Coimbatore in forest training. The Institute also provides training for forest officers. Indian Veterinary Research Institutes at Izatnagar and Hissar were established in 1890. The Institute carries on its normal activities, pertaining to research teaching, manufacture of veterinary biological products and advisory work. Six courses in forestry and conducts research on dairy problems. It is also an integral part of the development of higher heads of Red Sindhi and Gaur in the conduct of the Government of India, a Natural Dairy Research Institute. It has been started. The Institute is closely linked with dairy trade and industry and feeds it with information derived from scientific studies and field experiments. The Dairy Science College attached to the Institute functioning from 15th July, 1957. It is attached to the Punjab University. There are veterinary research stations at Kurnool and Comorin and a supply of water. Among the other important research stations are the Indian Institute of Research on the Water, Kurnool, which is engaged in fundamental and applied research in the entomology and chemistry of pest control. It has research the three important stations. The Central East and West Research Station, Central Veterinary Research Station, Kurnool Research Station, Madras Camp and Deep Sea Fishing Station in Bombay where inland marine and deep sea research is being carried on. Under these research there are many survey centres and stations.

Commodity Committees—The Indian Central Committees for cotton jute oilseeds, sugarcane coconut, coffee and tobacco operate and subsidise a number of research schemes at various research
stations and sub-stations. These committees are financed by proceeds of a cess levied on the particular commodity:—

(1) Indian Central Cotton Committee is concentrating its research on the development of long-staple cotton and improved strains for which India is deficient. The Technological Research Laboratory of the Committee continues to render valuable services to cotton breeders, the trade and industry in assessing the economic importance of new strains.

(2) Indian Central Jute Committee’s research and extension work is undertaken by Jute Agricultural Research Institute, Baraekpur, Technological Research Laboratories, Tollyganj, Calcutta, Economic Research Section and the Publicity Section. The Committee also sponsors schemes of fundamental research at the University of Calcutta, Bose Research Institute and Presidency College, Calcutta.

(3) Indian Central Oilseeds Committee continues to finance schemes for agricultural research, multiplication and distribution of improved varieties of oil-seeds, technological research of village industry.

(4) Indian Central Sugarcane Committee maintains Indian Institute of Sugar Technology at Kanpur, established in 1936. It conducts research in sugar technology, renders technical assistance to factories and trains students.

(5) Indian Central Coconuts Committee has many regional research stations. The Committee conducts researches on the various aspects of coconut cultivation.

(6) Indian Central Areca Nut Committee subsidises number of research schemes. There are three regional areca nut research stations in Mysore, Kerala and South Kanara and other places started with the help of the Committee.

(7) Indian Central Tobacco Committee was constituted by the Government of India in 1945 with representatives on it of all interests connected with the commodity. The Committee has since established the Central Tobacco Research Institute at Rajahmundry (Andhra) for fundamental research on all types of tobacco and applied research on cigarette tobacco and lanka tobacco grown in that area and regional experimental stations at Vedasandur (Madras) for cigar and cheroot tobacco, at Pusa (Bihar) for hookah and chewing tobacco, at Dinhata (West Bengal) for hookah and wrappur tobacco. A sub-station for flue-cured tobacco, also serving as a regional station for natu (country) tobacco, is functioning at Guntur (Madras). A tobacco research station has recently been established at Hunsu in Mysore State for research on cigarette and local tobaccos. Besides these, the Committee also finances wholly or partly research schemes on bidi tobacco at the Institute of Agriculture, at Anand, Bombay and at Nipani in Mysore and on hookah tobacco at Ferozepore in Punjab.

(8) Indian Central Lac Cess Committee, Ranchi, aims at
propagating the results of research among lac cultivators. It carries on research both on the entomology and chemistry of lac.

(9) All India Cattle Show Committee, Karnal, Punjab.

The number of research institutes, stations and farms are also maintained by the Central Commodity Committees:

1. Indian Central Cotton Committee has—(a) Technological Laboratory, Matunga, Bombay, (b) Institute of Plant Industry, Indore.

2. Jute Committee has—(a) Jute Agricultural Research Institute, Barrackpore (Bengal), (b) Technological Research Laboratories, Tollyganj, Calcutta, (c) Economic Research Section, Indian Central Jute Committee, Calcutta.

3. The Tobacco Committee has—(a) Central Tobacco Research Institute, Rajahmundry, (b) Cigar and Cheesoot Tobacco Research Station, Vedawandur, (c) Hookah and Chewing Tobacco Research Station, Pusa, Bihar, (d) Cigarette Tobacco Research Sub-station, Guntur, (e) Wrapper Tobacco Research station, Dinhata, Bengal.

4. Sugar Committee has—Sugar Sub-station, Karnal, Punjab.

The Directorate of Economics and Statistics—This sole organisation under the Central Government dealing with all agro-economic problems in the sphere of food and agriculture—has continued to fulfil its useful role by supplying statistical material, preparing memoranda on current issues of agro-economic policy, besides examining the progress in the implementation of the first Five-Year Plan. They issue All India Crop Estimates and All India Rice Estimates, regular forecasts for small millets.

OWNERSHIP & HOLDINGS—Of the 294 million persons which the 1951 census estimates as depending for their livelihood on agriculture, roughly 167 million consist of those who own (wholly or mainly) and cultivate land and their dependents. About 31¾ million belong to the category of cultivators of land not owned by them and their dependents. About 45 million consist of cultivating labourers and their dependents and about 5¾ million are non-cultivating owners, rent receivers and their dependents.

Average holding in India is about 5 acres, though the size varies from State to State. According to the Report of the Famine Enquiry Commission, it was 11.7 acres in Bombay, 10 in Punjab, 6 in U.P., 4.5 in Bengal, 4.4 acres in Madras. A greater evil than sub-division is the fragmentation of holdings. It is the biggest single obstacle to economic cultivation, leading to increased overhead costs and to the under-employment.

Both voluntary method and compulsory method for the consolidation of holdings have been tried since 1912 to check sub-division and fragmentation. Punjab had led the way in voluntary consolidation. Legislation involving varying degrees of compulsion have therefore been enacted and revised from time to time in the States. Efforts have also been made to organise co-operative farming. The trend of legislation and land policy in recent years has been to prevent the growth of small and uneconomic holdings and concentration
of land in a few hands. The legislation for the consolidation of holdings was first passed in Madhya Pradesh in 1928, Uttar Pradesh (1939), Bombay (1947), Punjab (1936 and 1948), Delhi (1936 and 1948), Jammu and Kashmir and PEPSU have passed similar acts for consolidation of holdings.

AGRICULTURAL POLICY—The growing shortage of food had been the main feature of the Indian agriculture for the last 30 or 35 years. The acute food-shortage was brought out prominently during the Bengal famine of 1943. This food shortage was due to the various causes, such as phenomenal increase of population outstripping production of food, partition of the country, etc. So various means were undertaken by the government to increase the food production of the country. From the famine year of 1943, Grow More Food Campaign was initiated. During first four years of starting of Grow More Food Campaign, grants and loans were given by the Centre to the States to enable them to increase production. Central assistance was, however, given only for specific programmes—such as works schemes and supply schemes. Works schemes include the construction and repair of wells, tanks, small dams, channels and tube-wells, and the installation of water-lifting appliances such as pumps etc. Also included in this class were the schemes of contour-bundling and the clearance and reclamation of waste land. Supply schemes cover the distribution of fertilizers and manures and improved seeds.

The principal aspects of the development under these schemes are the following (1) minor irrigation which consists of wells and tanks, pumping sets, Persian wheels, tube-wells, etc. (2) land Reclamation (3) manures and fertilizers (4) Distribution of improved seeds (5) Japanese methods of paddy cultivation.

METHODS OF FOOD PRODUCTION—The various important methods for the increase of food production which have been adopted by the government are as follow:—

G. M. F. Campaign—The Grow More Food Campaign has given impetus to better irrigation facilities, increased use of fertilizers, improved varieties of seeds, improved cultural practices and various methods of intensive cultivation. Central Fertilizer Pool has been formed to make ammonium sulphate available to the cultivators throughout the country at reduced and uniform prices. The consumption of super phosphate, compost manure, bonemeal has been greatly increased. Multiplication and distribution of improved seeds is developing rapidly. The distribution of seeds is handled through Government depots and co-operative societies. Under the 2nd Five-Year Plan, a seed multiplication farm with one or two seed stores will be set up in each national extension service block. Other important improvements under G.M.F. campaigns are minor irrigation projects for sinking and constructing of tube-wells and introduction of Japanese methods of paddy cultivation in 1953, which lays more emphasis on higher doses of fertilizers and is recommended where adequate moisture supply is assured. Average yield of rice per acre under the Japanese Method worked out to 24.89 maunds as against 13.33 maunds by local
method. The area under the method of cultivation has increased to about 24 lakh acres in 1956-57.

After Grow More Food Campaign came the Integrated Production Programme. It was formulated in 1950-51 for the achievement of relative self-sufficiency in food, cotton, jute and sugar. It has become a part of the first Five-Year Plan which has, in turn, been integrated into the ten-year programme of land transformation. The five main programmes are (a) concentration of the available funds and technical facilities in 48 million acres with an assured water supply, (b) reclamation and cultivation of 10 million acres of waste and fallow lands, (c) organisation of Bhumi Sena, (d) gosambardhan drive for producing 80,000 stud bulls a year and for the eradication of rinder-pest in the country and (e) regular observance of Vana Mahotsava with the object of planting 300 million trees.

Land Reclamation—The land reclamation work for bringing more land under cultivation is carried on by two agencies, namely, Central Tractor Organisation and Tractor Organisation of certain States. Central Tractor Organisation was founded in 1917 with about 200 tractors abandoned by U.S. Army. Since its inception, it has carried out some of the largest reclamation operation in Asia. The Central Tractor Organisation reclaimed up to October 1957 over 16 lakh acres of kant-infested and jungle areas in the Punjab, Madhya Pradesh and Uttar Pradesh and has developed lands for cultivation in Bihar. A fleet of 240 new tractors was purchased in 1951 out of a loan obtained by the Government. Stations have been established at Amraoti, Bilaspur, Cuttack, during the First Plan 10.84 lakh acres of land were reclaimed by the Central Tractor Organisation and about 17 lakh acres by State Tractor Organisations. The Organisation also embarked upon a new type of work, viz., land levelling and terracing in Bihar and M.P. A Tractor Training Centre has been set up at Budi (Madhya Pradesh).

Plant Protection and Locust Control—Plant Protection Equipment Stations have been established at Amraoti, Bilaspur, Cuttack, Dhanwar, Gauhati, Guya, Pathankot, Delhi, Palampur, Indore, Hyderabad, Tiruchirapalli, Ernakulam and Bara Banki.

An aerial unit was established in May, 1957. Plant Protection Stations were established at the sea ports of Calcutta and Visakhapatnam and at the air ports of Bombay, Madras, Calcutta and New Delhi. A field station for investigation on locusts was established in Bikaner.

Crop Competition—Another method for the increase of crop production is the crop competition initiated by the Central Government. Under this competition, the Central Government award all-India cash prizes of Rs. 5,000 and a certificate of Krishn Pandit to the farmers producing highest yield in respect of wheat, gram, potato, paddy, jowar and bajra crops.

BHOODAN MOVEMENT—On a rough estimate there are about 4.5 million landless labourers in the country. In spite of the abolition of zamindaries, there was no hope for these landless labourers. So
Acharya Vinoba Bhave has started Land Gift Movement. This is an appeal to the landowners of India to donate land for the landless. The noble efforts of Vinoba Bhave have met with remarkable success. The movement has also received direct support of the State Governments and some political parties. Millions of acres of land have been donated. For the proper utilization of this donated land, the scope of the movement has been enlarged—such as Koopdan (gifts for sinking of wells) and Sampattidan (gifts for procuring agricultural implements and drought animals).

AGRICULTURAL MARKETING—The object of agricultural marketing is to reorganise the existing system so that farmer may secure his due share of the price paid by the consumer and to subserve the needs of planned development. These objectives are sought to be secured through regulation of markets, standardisation and grading of commodities and development of marketing and processing on a co-operative basis. Agricultural Produce (Grading and Marketing) Act was passed in 1937 for grading the agricultural produce. The grading under this Act is permissive. But it is compulsory in respect of some export commodities such as sann-hemp fibre, cigarette tobacco leaf, wool, bristles lemon grass oil and sandal wood oil. The Directorate of Marketing and Inspection whose functions are related to the grading and standardisation of agricultural commodities, promotion of regulation of markets, training of marketing personnel, surveys on marketing of agricultural commodities and the administration of the Fruits Products order, fixed grade specifications for 114 varieties of different commodities. Under this Act, Agmark has been chosen as national insignia and all graded commodities are marketed under this stamp which stand for purity and quality. Important commodities now graded under Agmark are ghee, vegetable oils, cream butter, eggs, rice, atta, cotton, gur, jaggery and fruits. Commodities graded primarily for export are tobacco, saan hemp, essential oils (sandal-wood and lemon grass), wool and bristles. By notification under S. 19 of the Sea Customs Act, 1878, it can be ensured that specified commodities are permitted for export only after grading. Quality control work in respect of fruit and vegetable products, such as jams, jellies, quashes and other soup drinks is enforced under the Fruit Products Order, 1955. In addition to grading, the Directorate has been paying increasing attention to the regulation of markets and market practice. Agricultural commodity markets are regulated under the State Agricultural Produce Markets Acts. The Advisory Section set-up in the Directorate in 1958 continue to render assistance and advice to State Governments. Acts to regulate markets are in force in nine States—Bombay, Madras, Mysore Andhra Pradesh, Vindhya Pradesh, Punjab, Kerala, Delhi, Orissa.

An integrated programme of co-operative development embracing credit, marketing, processing, warehousing and storage was formulated on the basis of the programme recommended by the Rural Credit Survey Committee of the Reserve Bank.
AGRICULTURE IN INDIA

The Committee recommended State partnership with Co-operative institutions at various levels. To enable the State to subscribe to the share-capital of co-operative credit institutions, a National Agricultural Credit Fund has been created by the Reserve Bank. A National Co-operative Development and Warehousing Board has been set up and a Central Warehousing Corporation and 16 State Warehousing Corporations are to be set up. With the establishment of warehouses and godowns, the cultivators will be able to store a sizable part of the marketable surplus of their commodities, at the same time obtain short-term credit on the basis of warehouse receipts.

AGRICULTURAL WAREHOUSING CORPORATION To facilitate marketing of agricultural produce, it was planned to establish a Central Warehousing Corporation at the Centre and a State Warehousing Corporation in each State. Central Warehousing Corporation has come into existence and has started six warehouses in hired accommodation at the following centres—Amaravati, Gondia, Sangli, Dodag, Davangere and Bargarh. State Warehousing Corporations have been started in seven States, namely, Bihar, Bombay, Mysore, Rajasthan, Madras, West Bengal and Orissa.

FOOD CROPS

Rice—the staple food of the majority of the people, is the leading crop of India and occupies about 30 per cent of the total cultivated area. As sufficiently high temperature, high rainfall and fertile alluvial plains are necessary for the growth of the crop, the southern and north-eastern parts of India are the main regions of rice growing. In order of merit, Madras, Bihar, Bengal, U.P., M.P., Orissa, Assam and Bombay are the main rice-growing areas. Rice is special crop in the monsoon tracts. In eastern and southern India it is the staple article of diet. The bulk of rice is a winter crop, sown in June-July and harvested in November-December. There are about 4,000 distinct varieties of rice in India. The average rice yield in India is low, being only 723 lb. of cleaned rice per acre as compared to 2,350 lb. in Japan.

Wheat—which is the staple food of central and northern India is a winter crop, sown in India from October to December and harvested from March to May and stands next only to rice in importance. U.P. and Punjab form the principal wheat-growing area, supplying about three quarters of the total outturn in the country. The two main species of wheat grown in India are the so-called 'bread' wheat of Europe and the so-called 'marcou' wheat and it is estimated that about a third of the total acreage of wheat in India is under improved varieties.

Barley—a subsidiary food to wheat-eaters is a rabi crop and is grown mainly in the U.P. and Bihar. Compared to her pre-war acreage and yield of about 6 million acres and about 1.9 million tons, India has now about 7 million acres under barley, producing about 2.4 million tons.

Millet—via., jowar (called choiham in Madras) and bojra. The
two main varieties of millets grown in India constitute the staple food of the agricultural population of the south. Both of them are mainly grown as bhajri crops. While jowar is mainly grown in Bombay, Hyderabad, M.P., Madras, U.P., bajra is grown mainly in the Rajastan, Bombay, the U.P., Madras and Punjab in order of importance. It is estimated that jowar is grown in about 20 million acres yielding about 4 million tons while bajra is grown in about 16 million acres yielding more than 2 million tons. Another such food-crop, grown mainly in the south, is ragi which accounts for about 5 million acres, producing about 11 million tons annually. Another food crop, uncommonly rich in its food value, is maize (commonly known as makai or banni). Although grown more or less all over India, it is grown mainly in the U.P. and Bihar.

Gram and the Pulses—These constitute an important and balancing item of the popular diet in the country. Pulses form the primary source of protein for the vegetarian population of the country. Some of them form a source of nutritious fodder, while others make excellent green manure crops. Gram, the most commonly grown pulse of India, is a rabi crop and accounts more or less for about 17 million acres and 35 million tons. U.P., Punjab, Bihar, M.P., and Hyderabad are in order of merit the most important gram-producing areas. Khesari, mung, moong, ather, matter and kalai are the other pulses, also grown extensively throughout the country.

Spices—Though spices constitute only a minor crop in India's agricultural economy, their importance in the foreign trade of the country is considerable. The five important spices, pepper, cashew-nuts, cardamom, ginger and turmeric earn considerable foreign exchange. The Spices Enquiry Committee in 1953 drew attention to the need for organised efforts for improving the production and marketing of these commodities. The committee stressed in particular the need for promoting developmental measures, more agricultural research, improvement of methods of marketing and export promotion.

Pepper—The West Coast, principally Kerala, is the source of pepper in India, though it is also grown in small quantities in Mysore, Madras and Bombay. There has been a steady increase in production in the post-war period. By far the greater part of exports is to the United States. Under the second Five-year Plan, the production of pepper is expected to increase from 27,000 tons to 32,000 tons.

Cashewnuts—Next to pepper, the most important dollar earner among spices is cashewnuts. India is now the principal source of supply for cashew kernels in the world, accounting for more than 95 per cent of the world trade in this commodity. The Cashew grows mainly along the coast, from Kanya Kumari to Bombay on the west coast and upto Brahampore along the east coast, over a variety of conditions of climate and soils. The area under cashew is over 2 lakh acres and the annual production of Kernels is about 80,000 tons. Kerala is leading in area and production, is not sufficient to keep the factories busy throughout the year. Under the second Five-Year Plan, it is proposed to increase the production of cashewnuts from 80,000 tons to 106,000 tons or an increase of about 77 per cent. Under
the auspices of A C A R and State Governments, three research stations have been established at Ratnagiri in Bombay, Mangalore in Mysore State and Kottarakkara in Kerala with a view to promoting production of superior high yielding types.

Ginger—Like pepper, cashewnuts and cardamoms, the next important ginger-growing area is Kerala, though it is also grown in other States like Uttar Pradesh, Jamaica and Sierra Leone form the main source of supply of this spice to the world. The bulk of the production in India is consumed as green ginger and the conversion of green ginger into dry form for export purposes is concentrated in the west coast region of Kerala. For evolving a better type of ginger with less fibre content, a Ginger Research Station at Karalangad in Kerala is proposed to be set up.

Turmeric—The principal turmeric growing areas in India are East Coast namely, Andhra and Orissa. To a smaller extent the crop is also grown in parts of Bombay, Madras and Kerala. The Turmeric Research Station started at Udaipur in Orissa State under the auspices of I C A R has been carrying out investigations on many local problems of Orissa.

Other Food Crops—Among other food crops mention must be made of the overall shortage of fruits and vegetables which for the most part is almost totally out of the reach of the general mass of people and due to which the latter is an insufficient unit of popular food considering the dietary habits of the people. The present annual supply of fruits and vegetables amounts to only 15 and 13 ounces per adult per day against the diet at 3 ounces and 10 ounces respectively. To make the position clear it may be mentioned that in potatoes for example, India’s production is so very low that the per capita consumption comes to about only 8 lb per annum as compared to 506 lb in Belgium.

PLANTATION CROPS

The great plantation areas of India are Assam in the north, the Nilgiri Hills and the West Coast area of Kerala in the South. The crops that are grown in the plantation areas are detailed below.

Tobacco—India stands third in the production of tobacco, the other countries being USA and China. It brings to the Indian grower an annual return of about Rs 40 crores. It fetches to the country foreign currency to the tune of about Rs 12 crores and it contributes to the national exchequer about Rs 35 crores annually by way of excise duty. Andhra Pradesh by far the most important tobacco producing State contributing about 40 p.c. of the total production in India. About 95 p.c of the country’s Virginia tobacco comes from this State. Bombay comes next, followed by Madras, Mysore, Bihar and West Bengal. The other tobacco growing States are Assam, Orissa, Madhya Pradesh, Rajasthan and Punjab. Tobacco grown in India is of two distinct botanical species *Nicotiana tabacum* and *Nicotiana rustica*. The former has pink flowers.
with large sessile leaves, while the latter has yellowish flowers and leaves with rounded tip. *Nicotiana tabacum* is used in the manufacture of cigarettes, cigars, cheroots, bidi, chewing tobacco, snuff, hookah and pipe tobacco, while *Nicotiana rustica* is used mainly for hookah, chewing tobacco and snuff. Tabacum provides the bulk of the export trade, with only a small portion consisting of rustica. Rustica represents only 8 p.c. of the total production of tobacco in the country. Cultivation of *Nicotiana rustica* is mainly confined to Upper India, while Nicotiana tabacum is grown all over the country. Tobacco cultivation in India is concentrated in the following zones—(1) Guntur area consists of the districts of Guntur, Krishna, East and West Godavari and Telangana in Andhra Pradesh. This area grows virginia tobacco (white burley and sun-cured virginia). (2) Charotar (Gujarat) area comprises the Anand, Borsad, Petlad and Nadiad talukas of Kaira district of Bombay State. This area grows mainly varieties of bidi tobacco famous all over India. (3) The Nipani area covering Belgaum in Mysore and Satara district with Kolhapur, Sangli and Miraj in Bombay State is also an important bidi tobacco-producing zone in the country. (4) North Bihar and Bengal area comprising the districts of Muzaffarpur, Darbhanga and Purba in Bihar and Jalpaiguri, Malda; Bankarpur and Unnaipur in West Bengal grows tobacco varieties used mostly for hookah smoking and also for chewing and for preparing snuff. They are known locally vilayati, mathari and jati. (5) The Uttar Pradesh and Punjab area containing the district of Furrukhabad in the U.P. and the districts of Jullundur and Ferozepur in Punjab, produces types of tobacco used mainly for hookah smoking and chewing. (6) South Madras area covers Madurai and Coimbatore districts of Madras State. In this area, chewing snuff, filler and binder tobaccos are mostly grown.

Poppy—which was an important narcotic crop before International Agreement that led to the restriction of opium exports, is at present grown chiefly in U.P. and Central India and that mainly as a Government monopoly.

Cinchona—is mainly grown on Government plantations in the Nilgiri Hills and Darjeeling. Considering the overall need of the malaria-stricken country-side, production is still short and has to be supplemented by imports.

Tea—India is overwhelmingly the largest producer in the world. The yearly production is nearly 600 million lbs. About 82 per cent of India’s tea comes from North India, mainly from Assam and the Doon areas (West Bengal); this tea is exported through the port of Calcutta. Tea is, after jute and cotton, India’s most important exchange earner.

Coffee—next to tea, coffee is considered the most important plantation crop in India. The Indian production though small, has consisted always of a large proportion of highest quality and is grown in about 224,000 acres yielding about 18,000 tons. India produces less than one per cent of the world coffee output. There are about 10,851 coffee plantations in India. With the exception of small
areas in Orissa, Assam and Madhya Pradesh, Indian coffee is grown in the low hills of South India. Mysore is the most important growing area followed by Madras, Coorg and Travancore-Cochin.

Rubber—The cultivation of raw rubber on a plantation scale was undertaken in Travancore-Cochin, Malabar, Coorg and Mysore in early years of the present century. The production of rubber in the country at the present time is of the order of 16,000 to 17,000 tons. The total number of rubber estates registered upto 1957 was 37,283, of which 72.85 p.c. are located in Travancore, 7.19 p.c. in Cochin, 16.55 p.c. in Madras (mainly Malabar) and remaining 2.41 p.c. are in Coorg, the Andamans and Assam.

Pepper—India is supplying two-thirds of the estimated world demand. She is now producing, in and below the Western Ghats between Karwar and Cape Comorin, 31,000 tons of pepper grown over 195,000 acres.

Cardamom—is another spice, the largest exporter of which is India. The cardamom plantations are situated in the Western Ghats, south of Nilgiris and Palghat gap with the main concentration in the Cardamom Hills of Travancore (Kerala). Besides being the largest exporter, India forms the only source of true cardamom in the world market. India's cardamoms are valued for their higher oil content and aromatic properties and are, therefore, considered superior to the cardamom exported from other countries like Ceylon and Indo-China. The main markets of export are Sweden, Kuwait and Saudi Arabia. A Cardamom Research Station is being set up in Kerala.

Cloves—are chiefly grown in the foot-hills of the Western Ghats in the State of Madras. The production is insufficient to meet the demand.

FIBRES

Cotton—is the chief commercial crop of India. Bombay, Punjab, Madhya Pradesh, Madras, Uttar Pradesh, Punjab, Andhra Pradesh, Rajasthan, Saurashtra, are the important cotton producing tracts of the country.

Jute—A monopoly of undivided India, it is at present grown in about 706,000 acres yielding about 2 million bales against a total requirement of about 6 million bales. Endeavour is being made therefore to extend its cultivation. Reclamation of fallow land, diversion of aus paddy land, double cropping of aman paddy land are some of the measures adopted to secure an increase in jute production and the result has been the progressive increase of jute production in India. The heat and humidity and heavy downpour of rain—unpleasant features of the climate of Bengal, are ideal for the growth of jute. The outturn of dry fibre of jute generally varies from 8 to 25 mds. with an average of 11 mds. per acre, depending upon soil fertility and other factors.

Hemp—is another fibre grown in India chiefly in the M.P., the U.P., Bombay and West Bengal. Small as the production is, it is used largely for the production of cordage and canvas.
Silk—Two-thirds of the total output of this fibre comes from Mysore. Of the other varieties of silk, "mulberry" silk is grown in the districts of Murshidabad, Malda and Birbhum of West Bengal, Dehra Dun and Parbatgarh of the U.P., Gurudaspur of Punjab and in Kashmir, where it is a state monopoly; ' tasar' silk in the M.P., and the Chotanagpur division of Bihar; 'eri' silk in the Jalpaiguri district of West Bengal and in Assam; and 'Muga' silk in Assam and Manipur.

OTHER CASH CROPS

Sugarcane—In the sugar map of the world, India occupies a leading place producing about 4½ million tons, even exceeding that of Cuba. Sugarcane-growing is an important element in the agricultural economy, specially in Uttar Pradesh and Bihar. The average yield of cane per acre is now around 14 tons as compared to 56 tons in Java and 62 tons in Hawaii.

Indian Central Sugarcane Committee is a Central Organisation for co-ordinating sugarcane research and development work.

Lac—is a resinous material secreted by an insect which lives as a parasite on certain kinds of tropical trees known as lac hosts. The principal lac hosts are Polas, Ber and Kusun. The cultivation is not organised on a plantation basis and the trees are scattered on the holdings of cultivators and in the forest. The important producing places of lac are Chota Nagpur Division of Bihar, Purulia District of West Bengal as also of Madhya Pradesh, portions of Bombay, Orissa and Assam. This is an important 'cash crop' for the Adivasis. Lac is secreted from the glands of the lac insects and gradually a thick encrustation round the twigs is formed. This encrustation known as sticklac is scrooped from the sticks and then crushed and washed to remove some of the impurities, such as dye and wax. The resultant product is known as seed lac. Seed lac is then processed into shellac either by indigenous cloth-bag method or hydraulic pressure method or solvent process method.

Myrobalan—is a small fruit produced on trees in mixed deciduous forests normally below 3,000 feet above sea level, but occasionally found up to 5,000 feet. When pulped it produces a substance used in the tanning industry. It is also used as a country medicine. The fruit is collected in the forests in Madhya Pradesh, Madras, Bombay, Bihar and Orissa and also derived from private forests.

Lemongrass Oil—Oil of lemongrass is an essential oil, a product distilled from the leaves of a special species of grass botanically known as cymbopogon flexuosus. Lemongrass of the best variety which yields a superior oil is used for extracting aromatic chemicals employed in perfumery, soap, cosmetics and pharmaceutical preparations. The Travancore-Cochin Government Lemongrass Research Station has been established at Odakali near Perumbavoor, 14 miles from Ernakulam on August 27, 1955. Lemongrass is a dollar-saving product. Nearly 75 per cent of the world's supply of lemongrass oil is produced in the State of Travancore-Cochin where the area under cultivation is estimated at 40,000 acres.

Cashew Nuts—are grown mostly in Madras, Bombay, Orissa,
AGRICULTURE IN INDIA

Bengal and Kerala. Madras State is by far the most important State as far as cashew nut production is concerned. India ranks as the most important producer of cashew nut in the world and holds almost a monopoly, accounting for more than 95 per cent of the international trade in cashew nut kernels.

OILSEEDS

Oilseeds—India is one of the largest producers of oilseeds and holds a prominent position in the world trade of oilseeds being one of the principal exporting countries. Oilseeds in India are grown in an area of about 23 million acres representing 8 p.c. of the net cultivated area. Oilseed crops are those, from the seeds of which oil, either edible or non-edible is extracted. The crops may either be perennial as coconut, neem, mahua or annual like groundnut, gingelly, etc. Groundnut, gingelly, mustard, copra, castor and kusum are the most important edible oilseeds. The importance of oilseeds in the Indian economy is indicated by the fact that more than 25 million acres are devoted to their production, equivalent to about 10 per cent of the net area sown with crops in the whole of India. Indian Central Oilseeds Committee Act which was passed in 1946 was intended to promote the improvement and development in the cultivation and marketing of oilseeds and oilseeds products and in accordance with this Act the Indian Central Oilseeds Committee was constituted in May, 1947. This Committee is responsible for the development of all oilseeds excepting coconut for which a separate Committee, viz., Indian Central Coconut Committee at Eranakulam (Cochin) has been constituted under the Indian Central Coconut Committee Act, 1911.

Linen—A rabi crop, producing a very important industrial oil, is at present grown in about 3.5 million acres yielding more than 350,000 tons annually. Cultivation of linen is widespread throughout India; main centres being Madhya Pradesh, Uttar Pradesh, Andhra, Bihar, Madhya Bharat, Rajasthan.

Castor—Another non-edible oilseed, is a virtual monopoly of India, the average acreage and yield in recent years being 1.4 million acres and about 130,000 tons. It is grown almost throughout the length and breadth of India and Hyderabad is the most important producer with an area of 879,000 acres. About 70 per cent of the crop is available for export either as seed or as oil. India comes next to Brazil only in world production and trade of castor seed.

Groundnut—India has the largest area under groundnuts in the world. The groundnut cultivation has become a major agricultural operation in India and the crop is now estimated to occupy nearly 42 p.c. of the area under all oilseeds and 4.4 p.c. of the total area sown under all main food crops in the Indian Union. From a mere 0.5 million acres at the beginning of the century, the groundnuts now account for nearly 11 m. acres with an annual yield of 3.4 million tons of nuts in shells and 4.10 m. tons of kernels. Nearly 80 p.c. of the groundnut area is concentrated in Madras,
Andhra, Bombay, and the prominent varieties grown are the Coromandel and the Peanuts. Bold nuts grown in Saurashtra with a lower oil content are specially valued for eating.

The oil is used for culinary purposes. The advent of vanaspati has set up a great demand and vanaspati industry is the single largest consumer of groundnut oil.

Rape and Mustard—two other very important edible oilseeds are, unlike groundnut, rabi crops accounting for about 4.3 million acres and a little less than 800,000 tons in normal years. Uttar Pradesh grows well over half the rape and mustard in India. Other important producing areas are Bihar, Punjab, Assam and Rajasthan.

Sesamum—or gingelly or til also an edible oilseed, is a kharif crop grown in a little less than 4 million acres with an yield of more than 340,000 tons in normal years. The chief growers of sesamum are U.P., and Madras followed by Rajasthan, Hyderabad and Madhya Bharat.

Coconut—is an important oil-yielding tropical fruit. It provides many useful products to mankind. The kernel of the ripe nut in its raw state finds wide use in culinary preparations or is dried and converted into copra and crushed for oil. Coconut oil is greatly in demand for edible purposes as well as for the manufacture of soaps and toilet preparations. The tender nut affords a refreshing drink, while the unopened shell on tapping yields a sweet-juice or neera. Its leaf and timber are extensively used for constructing houses. In India it grows luxuriantly in the coastal and deltaic tracts and also in the interior of Mysore. India's share in the world acreage and production comes to 1.5 million acres and 3,400 million nuts respectively. The bulk of this produce comes from the plantations located in the strip of land lying on the west coast of India between the Arabian Sea and the Western Ghats, extending from the Konkan in the north to Cape Comorin in the south and falling within the territories of North Kanara of Bombay State, South Kanara and Malabar districts of Madras and Kerala. The districts of Tanjore, Godavari in Madras, Andhra and Mysore, Orissa and Bengal also possess appreciable areas under the crop. To rehabilitate the industry and promote research a statutory body, the Indian Central Coconut Committee representing various interests, was constituted by an Act of 1941.

Cotton-seed—also an edible oilseed, is naturally a by-product of cotton cultivation and is extensively grown in India; the average annual production being above 2 million tons.

**PRODUCTION OF FOOD GRAINS**

(000s omitted)

<table>
<thead>
<tr>
<th>CEREALS</th>
<th>(unit)</th>
<th>1953-54</th>
<th>1954-55</th>
<th>1955-56</th>
<th>1956-57</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>(tons)</td>
<td>27,769</td>
<td>24,531</td>
<td>26,846</td>
<td>28,142</td>
</tr>
<tr>
<td>Wheat</td>
<td>&quot;</td>
<td>7,890</td>
<td>8,778</td>
<td>8,569</td>
<td>9,068</td>
</tr>
<tr>
<td>Jower</td>
<td>&quot;</td>
<td>7,954</td>
<td>9,093</td>
<td>6,602</td>
<td>7,427</td>
</tr>
<tr>
<td>Bajra</td>
<td>&quot;</td>
<td>4,475</td>
<td>3,421</td>
<td>3,379</td>
<td>2,926</td>
</tr>
</tbody>
</table>
Maize (""") 2,991 2,939 2,554 3,020
Ragi (""") 1,846 1,646 1,820 1,914
Barley (""") 2,905 2,870 2,749 2,744
Small millets (""") 2,438 2,456 1,937 2,010
TOTAL CEREALS (""") 58,268 55,734 54,456 57,251

PULSES
Gram (""") 4,756 5,393 5,331 5,930
Other pulses (""") 5,694 5,477 5,500 5,505
TOTAL PULSES 10,450 10,870 10,831 11,435

TOTAL FOOD GRAINS (Cereals & Pulses) 68,718 66,604 65,287 68,686

NON-FOOD GRAINS
1. Sugar (raw) (tons) 4,423 5,760 5,982 6,745

(a) Groundnut (""") 5,285 6,242 5,705 6,032
(b) Rape & Mustard (""") 858 1,019 848 1,017
(c) Sesamum (""") 554 589 457 451
(d) Linseed (""") 379 382 414 349
(c) Castorseed (""") 103 124 124 129

3. Cotton (lint) (392 lb. each) 3,944 4,227 4,001 4,723
4. Jute (400 lb. each) 3,091 2,928 4,197 4,221
5. Mesta (""") 650 1,018 1,159 1,474
6. Silk (raw) (lb.) 2,462 3,208 .. ..
7. Tea (lb.) 5,88,733 6,46,384 6,35,357 .. ..
8. Coffee (tons) 25 26 30 ..
9. Rubber (""") 20 19 22 ..
10. Tobacco (""") 268 244 295 1,306
11. Lac (mds.) 654 1,023 1,218 1,315

(Report on Currency & Finance 1957-58)

INDEX NUMBERS OF AGRICULTURAL PRODUCTION
(Base: Agricultural year 1950=100)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cereals</td>
<td>58.3</td>
<td>101.4</td>
<td>120.1</td>
<td>114.0</td>
<td>113.7</td>
<td>119.4</td>
</tr>
<tr>
<td>Total pulses</td>
<td>8.6</td>
<td>98.3</td>
<td>112.0</td>
<td>117.3</td>
<td>112.3</td>
<td>120.9</td>
</tr>
<tr>
<td>Total foodgrains</td>
<td>66.9</td>
<td>101.1</td>
<td>119.4</td>
<td>114.4</td>
<td>113.5</td>
<td>119.6</td>
</tr>
<tr>
<td>Total oilseeds</td>
<td>9.9</td>
<td>91.9</td>
<td>103.7</td>
<td>121.7</td>
<td>109.2</td>
<td>115.9</td>
</tr>
<tr>
<td>Total fibres</td>
<td>4.5</td>
<td>128.4</td>
<td>132.1</td>
<td>141.2</td>
<td>148.3</td>
<td>169.9</td>
</tr>
<tr>
<td>Total plantation crops</td>
<td>3.6</td>
<td>115.7</td>
<td>104.0</td>
<td>113.2</td>
<td>118.5</td>
<td>120.2</td>
</tr>
<tr>
<td>Total miscellaneous</td>
<td>15.1</td>
<td>101.5</td>
<td>97.4</td>
<td>115.0</td>
<td>120.6</td>
<td>129.5</td>
</tr>
<tr>
<td>Total Non-food grains</td>
<td>33.1</td>
<td>103.8</td>
<td>104.7</td>
<td>120.4</td>
<td>120.7</td>
<td>129.8</td>
</tr>
<tr>
<td>All Commodities</td>
<td>100.0</td>
<td>102.0</td>
<td>114.3</td>
<td>116.4</td>
<td>115.9</td>
<td>123.0</td>
</tr>
</tbody>
</table>

## LAND UTILIZATION IN INDIA

(In million acres)

<table>
<thead>
<tr>
<th>Total Geographical area</th>
<th>1954-55</th>
<th>1953-54</th>
<th>1952-53</th>
</tr>
</thead>
<tbody>
<tr>
<td>According to Surveyor-general of India</td>
<td>806.3</td>
<td>806.3</td>
<td>810.8</td>
</tr>
<tr>
<td>According to village papers</td>
<td>719.2</td>
<td>719.0</td>
<td>718.3</td>
</tr>
<tr>
<td>Forests</td>
<td>123.8</td>
<td>124.3</td>
<td>126.1</td>
</tr>
<tr>
<td>Not available for cultivation</td>
<td>120.1</td>
<td>122.6</td>
<td>123.1</td>
</tr>
<tr>
<td>Other uncultivated land excluding fallow land</td>
<td>98.0</td>
<td>97.7</td>
<td>99.0</td>
</tr>
<tr>
<td>Fallow lands</td>
<td>61.6</td>
<td>61.1</td>
<td>65.4</td>
</tr>
<tr>
<td>Net area Sown</td>
<td>315.8</td>
<td>313.3</td>
<td>304.7</td>
</tr>
<tr>
<td>Total cropped area</td>
<td>355.8</td>
<td>352.0</td>
<td>340.0</td>
</tr>
</tbody>
</table>

## FISHERY IN INDIA

Indian with a coast line of 3,500 miles into which numerous large, perennial rivers discharge their silt-laden waters, innumerable gulfs, creeks, bays and oceanic islands, has a fishable area of about 110,000 square miles. Similarly, the extensive backwaters, estuaries, lagoons and swamps, numerous rivers, streams and channels and a very large number of perennial and semi-perennial lakes, beels, reservoirs, tanks, ponds and other stretches of water, a large proportion of which is culturable, are a rich potential of inland fisheries. So far as sea area is concerned, only a small portion is at present worked. This, it is stated, is because the methods used by Indian fishermen are not modern, most of them using country boats like catamarans and small nets which are not adequate for fishing in deep seas. The chief sources of supply of fish are the coastal margins of the sea, river estuaries and backwaters for marine and estuarine fish and rivers, canals, tanks, inundated tracts, etc., for the fresh water fish.

India's national income is enriched by nearly Rs. 60 crores from India's fisheries both marine and inland. Along the country's extensive coast-line about 73,400 fishing crafts employing nearly a million fishermen ply day and night. Indian fishermen compare poorly with those of foreign countries; their average being 2,500 pound per man per year, as against 80,000 in some foreign countries. Today more than 800 mechanised boats are operating on Indian coast lines.

INLAND FISHERIES—constitute fresh fish from rivers, canals, tanks, ponds, irrigation channels, inundated tracts, etc. They are the mainstay of inland fisheries of India. The extensive areas of Ganges system, Brahmaputra in Assam, Mahanadi in Orissa, Narmada, Tapti, Godavari, Krishna and Cavery in the Madhya Bharat and South India are the main area for inland fisheries. In this class of fish, West Bengal leads the rest of India. The three States of West
Bengal, Bihar and Assam account for 72 per cent of the total fresh water fish in India.

SEA FISHING—Sea fishing is mainly carried on in small crafts having a displacement of under five tons in coastal waters from five to seven miles from the shore and within a depth of 10 fathoms. With the exception of a few off-shore fishing boats operating in certain localities, very few fishermen make voyages which would entail staying in the open sea longer than 12 hours at a time. There is, at present, practically no night fishing. This is largely because the equipment used for sea-fishing consists mostly of boats, canoes, catamarans and small nets and tackles which are not of a type which can stand the rigours and requirements of off-shore or deep sea fishing. So the mechanization of fishing operation has become an absolute necessity.

The sea fisheries are confined to the coastal waters from the shore of Gujarat, Canara, Malabar coast, Gulf of Manar, Madras coast and Coromondal coast. The principal sea fishes around the coasts of India are herrings, mackerel, prawns, jew fish, cat fish, mullets, pomfrets, and Indian salmon. Mackerel accounts for over one-third of the total catch. Herrings account for over 15 p.c. of the total catch.

ESTUARINE AND BACKWATER FISHING—Chilka lake in Orissa, backwaters in Madras, Cochin and Travancore, deltaic areas of Sundarbans and Mahanadi are the principal sources of estuarine and backwater fish. The estuaries of Mahanadi and the Ganges stretching from Puri to Hooghly are extensive fishing grounds containing hilsa, pomfrets, prawns, catla, cat fish, rohu, etc.

REFRIGERATION—Another important item for the improvement of fish production in India is the refrigeration, without which this problem cannot be solved. At present, though large quantities of fish are being caught, but for want of refrigeration facilities and transport, only a small portion of the catch can be used in a fresh condition. So for the better supply of fish two things are absolutely necessary—(1) quick transport of fresh fish from large assembly centres to some of the towns in fast motor vans, (2) provision of refrigerated rail transport. Cold storage facilities exist in Bombay, Mangalore, Calcut, Cochin, Quilon, Trivandum, Madras and Calcutta.

FISHING INDUSTRY—(1) There is practically no fish-canning industry in India, but fish curing is being carried on in various ways. In India fish is preserved by desiccation with or without salt and by the use of antiseptic preservatives, such as brine, vinegar, etc. The main process is the desiccation by drying fish in the sun. It is also done by salt. Canning is practised on a limited scale in Madras and Bombay. The cured fish has developed lucrative export trade with Ceylon and other countries. Fish curing yards have been established along the coasts of India. In order to develop fish industry in India on extensive scale, refrigeration system has become absolutely necessary. Cold storage facilities are being developed in every part.

VARIETIES OF FISHES—More than 1,800 distinct species of fish are known to exist in the seas around the country and the inland
waters, but the varieties that are caught in appreciable quantities are limited in number. Pisciculture experts classify the commercially important varieties of sea fish into 15 groups and freshwater fish into eight.

The sea-fish groups include elasmobranchs, eels, cat fishes, silver-bar fish, herrings and anchovies, Bombay ducks, mackerels and tunas, silver-bellies, pomfrets, flat fishes, mullets, Indian salmon which is stated to be not a true salmon, jew fish, crustaceans and minor shell-fishes.

Fresh water fishes are grouped under cat-fishes, mullets, carps, prawns, murrels, feather backs, eels, herrings and anchovies. Though several kinds of edible fish are obtained from fresh water sources, only a fraction of the inland water area is devoted to planarian pisciculture.

Regarding fresh water fishes, carps form the most highly esteemed variety constituting about 34 per cent. such as Rohu, Catla, Mrigal and Calabaus which are well-known throughout India. Other important varieties are cat fish, wallago, bagarous, clarius, siulinda and macrones belonging to this class. Trout has been introduced into the hill streams in Kashmir, Kumaon and Nilgiri Hills.

Regarding river fishes the following may be specially mentioned: Masheer is available in the upper reaches of most rivers in India. Chilwa is a flat-sided, thin-bodied fish with his stomach running an edge. It occurs freely both in the north as well as in south Indian rivers. Murrel varies from 2 to 3 ft. in length. Batchwa is small but excellent for eating. Barils have 14 species and they are widely distributed throughout India. Olive carp is available in Madras and is also found in the fresh waters along the coast of India from Kutch to Bengal. Mulley has no scales.

Regarding tank fishing we have rohu which is met within most large-sized tanks.

FISH PRODUCTS—Besides articles of food, fish yield, several byproducts, such as fish-oil, fish-meal, fish-manure, fish-maws and shark-fins. The most important is fish oil, such as, sardine oil and shark-liver oil which are now produced on commercial basis in India. The oil is used for the manufacture of paints, soft-soaps, for softening hides, for tempering steel, batching jute and after hydrogenation for the preparation of edible fats. Fish liver oil produces vitamins A and B indispensable for wasting diseases. It is being manufactured by the Governments of Bombay, Madras and Trivandrum. The Government shark-liver oil factory is situated at Kochikode, Madhavpur which supplies shark-liver oil for use in hospitals and for sale to the public. Indian fishes such as salmons, jew fishes, cat-fishes are yielding ‘Isin-glass,’ a valuable article for the clarification of wines. Bombay, the east coast of Madras and Sunderbans in Bengal are the centres of trade of this commodity. Fish-scraps are converted into fish-meal as additional protein food for poultry and livestock. Fish refuse is being dried as fish-manure.

Fish-curing is also an important supplementary trade. The chief methods of curing fish in India are sun-drying and salt curing, either by dry or wet process.
FISHERY IN INDIA

RATE OF CONSUMPTION—The average per capita annual consumption of fish in India is estimated at 3.98 lb. Travancore has the highest consumption of 21 lb. per capita a year, which comes to about one ounce per capita a day. Other States which consume considerable quantities of fish are West Bengal, 13 lb. per capita a year; Madras 12 lb., Bombay seven lb., Assam six lb. and Orissa five lb. Consumption is the lowest in the Punjab with 0.08 lb.

In the FAO surveys, India has been included in the category of low fish-consuming countries whose average per capita consumption falls below five kilograms. India's neighbour Burma, is among the fish-consuming countries with an average of 20 kilograms per capita.

Nutrition experts estimate that for a balanced diet 13 ounces per day is required per adult i.e., 20 lb. per capita per annum.

Approximately 92 per cent of the total production in India is used for edible purposes and eight per cent for the manufacture of industrial and other products.

FIVE-YEAR PLAN—Under the second Five-Year Plan, a sum of Rs. 10 crores is to be spent by the Central and State Governments in the development of fisheries of which Rs. 82 lakhs will be devoted to mechanization and improvement of fishing craft.

FISHERIES RESEARCH & DEVELOPMENT—The work in respect of fisheries is carried out through the Central Inland Fisheries Test Station Balasore (Calcutta), the Central Marine Fisheries Research Station Mandapam, the Deep-sea Fishing Station, Bombay and the various Fisheries Extension Units. These Stations conduct investigations on fisheries problems under the Fisheries Research Committee of the Union Ministry of Food and Agriculture. Considerable research on fishery and exploratory fishing have been done by the Central Inland Fisheries Research Station in Calcutta.

Its substations at research units at Cuttack and Allahabad, Ahmadnagar, Guwahati and Tirunelveli. The main functions of the stations are to carry out research on various aspects of fresh water and marine fisheries. The station also conducts a training course.

The Central Marine Fisheries Research Station, Mandapam, has research units or substations at Calicut, Kollam, Bombay, Cochin, Mangalore, Waltair, Calcutta, Kendri, Quilon, Kakinada, and Vizianagaram for conducting fishery research on sardine, mackerel, bottom fishery, prawn and shell fish and sea weeds.

The Deep Sea Fishing Station, Bombay has the main functions to examine suitable types of power craft and gear for working in Indian waters during fishing seasons and equipment best suited for the preservation, storage and distribution of fish, charting of fishing grounds. An Off-shore Fishing Unit has been opened at Cochin.

Some of the steps taken by the Government to improve fish production are mechanization of fishing crafts, training centres for fishermen, cold storage facilities, formation of deep-sea fishing stations and research at the Central Inland Fisheries Station. The Central Deep-Sea Fishing Station at Bombay gives training in modern fishing methods. In Calcutta the fisheries training centre gives instructions in inland fisheries development.
CENTRAL BOARD OF FISHERIES—The Government of India has set up a Central Board of Fisheries under the Chairmanship of the Union Minister for Food and Agriculture for integration and coordination of fisheries research and development activities of the country. The Board will discuss at national level problems connected with fisheries research and development and recommend suitable measures for better co-ordination of this work between the Centre, States and fisheries organisation. A Standing Committee has also been constituted which will conduct the preliminary work and report on the progress made in implementing the Board’s recommendations.

FOREIGN AID—Fairly generous assistance has been received from foreign assistance programmes. F.A.O. has been providing technical assistance for the development of Indian fisheries. The Government of U.S.A. under their Technical Co-operation Programme have also given substantial assistance by providing equipment and technical personnel. Under the Indo-Norwegian Project Co-operation Programme a Fisheries Community Development Project has been established in Kerala and is functioning successfully in improving the economics, health and sanitary conditions of the fishermen community within the Project area by introducing motorized fishing, providing ice and marketing facilities and also by improving supplies of drinking water and facilities for medical relief.

With this foreign assistance and with their own resources, the maritime State have been able to initiate programmes to help fishermen to equip their boats with engines to enable them to go further into the sea. The use of better fishing nets has also been demonstrated to impress on the fishermen the need to replace their old small nets.

Progress in Kerala—The development of fishery in Kerala has been possible due to Norwegian Fisheries Development Project located in Quilon district. Norwegian Aid Scheme has been started under U. N. Organisation with the Governments of Norway and India as the parties to an agreement in 1953. The Norwegian Fisheries Development Project was really a Community Project in action being worked by Norwegians.

AQUARIUM AND MUSEUMS—The main aquarium of India is Tarapornvala Aquarium, Marine Drive, Bombay. Attached to this aquarium is the Marine Biological Research Station where facilities are available to research students for M.Sc. and Ph.D. degrees. A fish farm is being established at Sasson Dock, Bombay, for conducting research on problems relating to ancillary industries like shark liver oil, gelatine, glue, fish meal, etc. There are a museum and an aquarium in Madras, which preserve specimens of all important marine and fresh water fishes, many kinds of sharks, aquatic curios, etc. There is a small experimental aquarium of the Orissa Fisheries Department at Cuttack. A small museum exists in the Central Fisheries Research Laboratories, Lucknow.

PEARL OYSTERS—One of the important developments in the fish industry is the revival of pearl fishing by the Madras Government. Tuticorin in Madras is the centre of pearl industry in India.
ANIMAL HUSBANDRY

There are two types of oysters—(1) window-pane oyster shell used for decorative purposes and (2) real pearl oyster. The window-pane oysters are found in open sea off Coromandal coast, Madras coast and Cochin coast. The waters of the gulf between India and Ceylon and of the Arabian sea near the edge of the Kathiawar peninsula, as well as of the Gulf of Cutch are rich in oyster beds.

TOTAL FISH CATCH
(In thousands of metric tons)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>826.6</td>
</tr>
<tr>
<td>1951</td>
<td>762.6</td>
</tr>
<tr>
<td>1952</td>
<td>752.0</td>
</tr>
</tbody>
</table>

ANIMAL HUSBANDRY

IMPORANCE OF CATTLE IN INDIA—According to the 1951 quinquennial livestock census, there are 15.89 crore cattle, 4.48 crore buffaloes, 3.87 crore sheep and 5.66 crore goats in the country. India possesses more than one-fourth of the world’s total cattle population. India is mainly an agricultural country and more than 70 per cent of her population are tillers of the soil, and from time immemorial man and cow in India have become by long association inseparable entitles. It is estimated that the annual direct contribution from our livestock by labour alone is over 1,000 crores of rupees and by manure another 1,000 crores.

Indian cattle serve two main purposes: one is the milk production and the other is the supply of bullock power for agricultural operations like ploughing, carting, and drawing of water for irrigation. But Indian cattle are of inferior quality because there is indiscriminate breeding and a majority of them do not possess characteristics of any breed. The most important problem of animal husbandry in India is the breeding improvement of cattle. The old practice of distributing stud bulls have been found to be inadequate, because the supply of farm bulls is very small and the continuity of such supplies cannot be always steady. Even the very little improvement secured through pedigree animals is offset by the existence of a large number of unapproved bulls in the area. So the main points are (1) the passing of Livestock Improvement Acts which will secure the removal of scrub bulls by castration and other measures. Most States in India have now passed such Acts. (2) The second notable instrument for the improvement of breeding of animals is the introduction in 1946 of the pilot scheme for artificial insemination, which has proved its value and has become the first item in the programme of cattle improvement. (3) Introduction of herd book system in which all the animals true to type are recorded. This will help the systematic recording of milk production and definitions of breed characteristics of the important type on more scientific lines.
The work in respect of animal husbandry is shared by the Indian Council of Agricultural Research, the Indian Veterinary Research Institute at Izatnagar and Mukteswar, the National Dairy Research Institute at Karnal and the Cattle Breeding Station at Jabalpur.

**LIVESTOCK & THE INDIAN CONSTITUTION**—Organisation of agriculture and animal husbandry finds a place in the Constitution of India. For in Article 48 included in the “Directive Principles of State Policy”, it is directed that State shall endeavour to organise agriculture and animal husbandry on modern and scientific lines and shall, in particular, take steps for preserving and improving breeds, and prohibiting the slaughter of cows and calves and other milch and draught cattle. The main emphasis of development activity in the field of Animal Husbandry continues to be on the schemes relating to key villages, go-sadans, gausalas and dairying.

**All-India Key Village Scheme**—The all-India Key Village Scheme aims at an all-round development of India’s cattle. The ultimate objective is to increase the yield of milk and working efficiency. Scientific methods of breeding, proper feeding, improved management, effective disease control and better marketing are the main features of the scheme. These measures are adopted in select areas, called the key village blocks. A key village block is a compact area consisting of contiguous villages. Superior pedigree bulls are assigned to such a block. While superior germ-plasma is introduced to improve the herd of cattle, all undesirable bulls in the area are removed. Artificial insemination is popularised in order to utilize the limited number of good bulls to the maximum advantage. The animals are also vaccinated for the prevention of contagious diseases. Finally, steps are taken to increase the production of cattle feeds and fodder. The scheme was sanctioned in August 1952 as a part of the Five-Year Plan. By the end of the First Plan period, 146 centres and 555 units had been established. In the Second Plan period, it is proposed to establish 121 new key village blocks, each with an artificial insemination centre and 6 key village units. As an adjunct to the key village scheme, a cattle registration scheme has been introduced in 1954-55. A Central Artificial Insemination Station at Bangalore has been set up for the centralisation of collection and distribution of semen. A National Plan for the eradication of infectious diseases has been put into operation.

**Gau-Shalas**—There is a wide scope in the country for utilizing the facilities available with private institutions, such as Gau-Shalas and individual breeders, for cattle improvement. Under the new scheme, Gau-Shalas, which have adequate land and livestock and are being run on organised lines, will be taken up for development, which will be supplied with 10 pure-bred cows for each and a high quality bull at Government cost on condition that each agrees to provide a similar number of animals.

**Go-sadans**—Every effort is being made to eliminate the useless and low productive types for cattle improvement. It is estimated that about 8 per cent of our cattle population are unproductive and
2 per cent are useless. This large number of cattle compete with the useful ones for their feeds and fodder. They are also a source of congestion, thus helping in the quick spread of diseases. They also lay waste the crops, resulting in great loss in food production. Such cattle are, therefore, segregated and maintained on grazing in forests and waste lands which are not being otherwise fully utilized. Such centers are called Gosadans. The primary object of Gosadans was to transport old, useless, and uneconomic cattle from urban areas to prevent further propagation of unproductive cattle by castration of all males admitted in Gosadans. During the First Plan period 25 Gosadans were established in different States. Under the Second Plan, it is proposed to provide further Gosadans and establish Charamalans for the proper rearing and utilizing of hides and utilization of carcases.

Gamsanvadihana—A Central Council of Gamsanvadihana has been formed to advise the central and State Governments on problems of improvement and development of the cattle wealth of the country and to assist the State Federations of Gaushalas and Pinjapoles in regard to the development of these institutions, on proper lines. The Council also arranges for the celebration of Gamsanvadihana Week throughout the country.

Central Stud Farm—All-India Central Stud Farm has been started in Bangalore in 1935 by the Government of India as a part of an intensive scheme for the improvement and development of cattle in the country. The farm consists of pedigree breeds from all parts of India as well as foreign breeds. The pedigree breeds of this All-India Central Farm will consist of the Sindhi, Tharpur, Gir, Murrah, Ongle, and Kangayam types and the Jersey from America. The semen of these pedigree breeds will be available to the rural units, which will be run on the model of the key village scheme with a view to intensifying live-stock development by increasing the dairy quality of the indigenous stock, grading them up with foreign breeds.

All India Cattle Show—All India Cattle Show Committee was founded in 1918 with the object of organizing periodical shows. It is working steadily under the aegis of a large number of organizations and cash prizes are awarded to the winners at all these shows with a view to provide the necessary incentive to breeders. All India Cattle Breeders' Conference is also organized on the occasion of the All India Cattle Show. The conference is attended by the Secretaries of the various State organizations and the Government of India is utilizing them under the Second Plan. All the States have been invited to the Biennial conference in Lahore to Chini, Afghan and Pakist.
India, particularly the dry ones. In the eastern and southern parts where rainfall is heavy, the cattle are non-descript and do not belong to any definite breed. A few of these breeds are of the dairy type of which the females are high yielders of milk, but males are poor specimens. A large majority of the breeds are of the draught type, the bullocks being of high quality and the cows poor milkers. In between there are "dual purpose" breeds of which both the cows and bullocks are above the average. Some of the best varieties are mentioned here—

(1) Some of the best cows in India are Sahiwal in Punjab and Gir in Saurashtra. Red Sindhi whose habitat is in Sind (Pakistan) has been developed in Coorg and at Government farms of Karnal, Hosur and Koila. It is a milk bred cow and is one of the best and economical producers of milk.

(2) The important breeds of bullocks are Hissar and Hansi, found in Punjab and Nellore in Madras. Anurad Mahal is one of the best draught breeds found chiefly in Mysore State. Bullocks of this breed are active and fast trotters. Ongole bullocks are powerful and suitable for any work. Home of this breed is Nellore and Guntur districts of Madras. Other breeds are Kaneri in Gujarat, Kangayam in Madras, Kherigah in Uttar Pradesh, Dungi and Nimar in Bombay and Harina in Punjab. The next dual purpose animals, i.e., best for draught as well as milk purposes are Kaneri and Gir. The best breeds of buffaloes are Murrah in Punjab, Jafferabad in Saurashtra and Mehsana, Surati and Pandharpur in Bombay. These nine breeds of cattle from all parts of India are of first rate importance.

Sindhi—This breed hails from Sind, but several pedigreed heads of it have been established in India, particularly in Kathiawar on the West Coast. It is a distinctive dairy animal.

Sahiwal—Though originally belonged to central undivided Punjab, it is available in Karnal, Uttar Pradesh and Madhya Pradesh.

Harina—The home of this breed is the area covered by the districts of Rohtak, Hissar, Gurgaon, part of Karnal and the Delhi State. This breed is also produced in more or less pure form in Jind, Nabha, Patiala, Jaipur, Jodhpur, Loharu, Alwar, Bharatpur and in East Uttar Pradesh.

Murrah—The cows of this breed are good milker and the bullocks are excellent for draught. It is available in Southern Punjab, Delhi and Northern Uttar Pradesh.

Gir—The home of this breed is Kathiawar. Pure specimen of this breed is available in Junagadh.

Kankrej—The home of this breed is the country to the south-east of the Rann of Kutch, extending from the south-west corner of the Tharparkar district in Sind to Dholka in Ahmedabad district, also along the Banas and Saraswati rivers. It is one of the heaviest of Indian cattle.

Tharparkar—Coming originally from the arid semi-desert tracts of south-east Sind, this breed is mostly bred in India today in the north-east portion of Bombay State as well as Marwar.

Kangayam—The name of this breed is derived from the Kanga-
yam division of Coimbatore district, where it has been in existence for a long time.

Ongole—The home of this breed is Ongole tract of the Madras Presidency, comprising Ongole, Guntur, Narasaraopect, parts of Bapatla, etc.

It is a significant fact that good cattle are generally found in dry areas and inferior cattle in areas of heavy rainfall. The rainfall map of India more or less coincides with her cattle map.

Sheep—Another cattle wealth of India is sheep and goat. Their distribution is widely divergent—mainly dependent upon the climatic conditions, the number being smaller in heavy rainfall areas and greater in light rainfall areas. The sheep are of mutton variety and of the woolly type. The wool which is one of the main products of the sheep-breeding industry, holds eighth position amongst the agricultural commodities in the country's export trade. The sheep do not only provide wool, but also mutton, manure, pelts, hair, milk, butter and serve as pack animals to carry essential food-grains from their owners across the precipitous hills, where other systems of transport would perhaps fail.

There are about 14 breeds of sheep in India, which can be divided into two distinct types, namely, woolly and hairy. The woolly types produce wool fibres of fine or coarse quality, while the other just produce hair and are reared for manurial purposes and for providing mutton.

The carpet wool produced in India is classified in the world markets as East Indian type of wool and is sold under well-known names of Joria and Vinanere. The Bikaneri breed hailing from the desert of Bikaner is the hardiest breed known in India. This breed is becoming a cosmopolitan breed of India and is being introduced in different States. The fact that India is one of the main producers of carpet wool need not leave an erroneous impression that India produces only this wool. This country also produces large quantities of fine wool, specially in the hills of the Punjab, Uttar Pradesh and Kashmir. There are several types of hill-sheep along the Himalayan ranges which produce fine wool, such as Gurez, Karnah, Bhadaswah, and Rampur Busher. The story of Indian hill-sheep will remain incomplete without the mention of Pashmina goat coming from Ladakh, Kashmir. This goat produces the finest wool in the world, known as Pasham. We have a Tibetan sheep coming to Indian Hills in summer. Marino sheep are being introduced in our hill areas to improve the local sheep.

The wool-producing States are Punjab, U.P., Rajasthan. The average production of wool per sheep in India is 1.9 lb. The annual production of wool of Indian sheep is very poor when compared to that of other countries. The wool produced in India is also of much inferior quality. As an exception, the Kashmir goats are famous for fineness of their wool. There are some good sheep in parts of India like the Bikaner rams which are woolly types.

Sheep form an important part of the livestock wealth of India, their number is four crores. Out of the annual production of
60 million pound of wool, about half is exported. In addition, sale of surplus sheep to the meat market brings Rs. 30 crores annually. Besides, sheepskins in raw form earn Rs. 6 crores worth of foreign exchange for the country every year. Sheep manure is a very good soil fertilizer. India has three sheep-breeding regions—Himalayan region, Indo-Gangetic plain and the Deccan Plateau. The first is an important sheep-rearing area, the second produces the major portion of the wool clip. The third has two types of sheep—one which yields a clip and the other reared for meat production. The quality of wool is inferior because the fleeces are hairy and course. Indian Council of Agricultural Research launched pilot projects at the Livestock Farm, Hissar and at Poona. At the same time experimental flocks are maintained in livestock farms in Mysore and Madras States. Rearing of imported sheep was also started in Kashmir State. Eight sheep-breeding research stations have been set up at Pipalkoti (Garhwal District), Banijal (Kashmir), Sarabhan (Himachal Pradesh), Sardarshahr (Rajasthan), Patan (Bombay State, Poona), Kutukuppi (Mysore) and Salem and Chingleput (Madras).

Goat is also the principal source of meat supply in the country. The important varieties of goat are—Jamnapuri type of the Deccan Plateau, the Surti of West India and the black and white bearded variety of Bengal, Ganjam, and Telengani varieties.

India's goats number about 58 millions. Goats are prized for their meat and milk. Goat contributes only 3 p.c. of the total milk supply of India.

India's pigs belong to two principal species, namely, Indian wild boar found throughout India and pigmy hog in the forests at the base of the Himalayas in Nepal, Sikkim and Bhutan. Pigs are useful for bristles, Laird, meat (pork, ham, bacon) and skin.

Horses are mainly used for transport. The Kathiawar breed of horses known as kathi is famous for its great power and endurance. The Marхatta pony, the little Gujarat and Dharwadi of the Deccan are also famous. The ponies of Manipur are regarded as the best in India. Bhutia pony is also famous for the power of endurance and weight-carrying capacity.

Cattle Disease—Four lakhs of cattle die annually of rinderpest in India. Besides, those animals which survive, become less efficient for work and milk production. As a result of researches conducted at the Indian Veterinary Research Institute, Izatnagar and elsewhere, vaccines have been evolved to make them immune from the disease. During the first Five-Year Plan, a sum of Rs. 15.7 lakhs was provided for the eradication of rinderpest. In 1954 the Central Rinderpest Control Committee was also set up and in October 1954 a pilot project was initiated in Bombay, Hyderabad, Andhra, Mysore, Madras and Kerala. Production centres of vaccines have been established in Uttar Pradesh, West Bengal, Madras, Madhya Pradesh and Punjab and at the Indian Veterinary Research Institute, Izatnagar. Steps have been taken through F. A. O. to co-ordinate the activities of rinderpest control in the neighbouring countries of Pakistan, Nepal, Burma, Afghanistan and Ceylon.
ANIMAL HUSBANDRY

There is a Central Rinderpest Control Committee which has drawn up tentative scheme for eradicating rinderpest which kills 400,000 animals a year.

MILK PRODUCTION & SUPPLY—Ill-bred, ill-fed and ill-maintained as our cattle are today, the return from them is less than the amount expected. The yield of milk, particularly of cows, is very low in India. Our annual production of milk is about 4,684.59 lakh maunds. This comes to 4.77 ounces per head per day against the required minimum of 10 ounces from the nutritional point of view. In this respect India has the lowest figure in the world as this statistics will show—

<table>
<thead>
<tr>
<th>Per cow</th>
<th>Per cow</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$30$ gallons</td>
</tr>
<tr>
<td>India</td>
<td>$362$</td>
</tr>
<tr>
<td>Belgium</td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td>$387$</td>
</tr>
<tr>
<td>Netherlands</td>
<td>$373$</td>
</tr>
</tbody>
</table>

POULTRY—Poultry include those domesticated birds which reproduce freely and are of economic importance to man. They embrace chickens, turkeys, ducks, geese, guinea fowl, pigeons, peahen, etc. The most important of them is chicken. India’s total poultry population according to 1956 census is about 97 million, including ducks, of these about 36 million birds are hens whose laying capacity is, on the average, about $53$ eggs per bird per year. This is very low compared to the world average of about $120$ eggs. The important poultry-producing areas are Madras (25.2%), West Bengal (12.6%), Bihar (11.2%), Assam (8.3%), Bombay (8%), Madhya Pradesh (7%), etc. The per capita consumption per year of poultry meat in India is as low as $0.29$ lb. as against $29.82$ lb. in U.S.A., $20.91$ lb. in Canada, and $13.23$ lb. in France.

Fowls—Domestic fowls of India may be divided into two broad groups—desi and improved or exotic. The term desi means all indigenous fowls and are generally not of pure breed because of the promiscuous multiplication. The imported (exotic) breeds which have been acclimatised in India are mostly white Leghorn and Rhode Island Red. Small number of other breeds are Black Minorca, Plymouth Rock, Australorp, New Hampshire, Light Sussex, Brown Leghorn, etc. The total number of imported varieties in the country constitutes only about 1.4 per cent of the entire poultry population.

Ducks—It has been estimated that India has approximately 16 million ducks, representing 18 per cent of the domesticated duck population of the world. Madras and Bengal account for more than 75 per cent of ducks in India. The average annual egg production of the Indian duck is 90 to 100. Ducks are hardy and are free from contagious diseases. The birds are largely reared in the eastern and southern parts of the country, where there is abundant supply of water.
Poultry Development—In 1938 a poultry research division was established at the Indian Veterinary Research Institute, Izatnagar, which is a landmark in the development of poultry in India. This Institute evolved a suitable vaccine against Ranikhet disease and fowlpox. Efforts have been made at the Institute for the improvement of indigenous birds by selective breeding and crossing. Indian Council of Agricultural Research sponsored and subsidised development and research schemes on poultry in several of the States under the Grow More Food Campaign. An all-India scheme for the development of poultry has been sanctioned for the Second Plan period at an estimated cost of Rs. 258.4 lakhs. It envisages the establishment of five regional farms and 300 extension centres-cum-development blocks throughout the country. Poultry shows will be held annually. A Poultry Development Officer has been appointed at the Centre to secure the implementation of the All-India Poultry Development Scheme.

ANIMAL PRODUCTS—Besides animal products of milk and wool, the principal animal products of India are blood, bones, ivory, tallow, and hides and skins. Bones are used as manure and for the manufacture of buttons, handles, toys, glue and are a source of superphosphates. Supply of horns comes from U.P., Punjab, Madras and Bengal. Buttons, toys, manure, glue, gelatine, etc., are made by horns. Ivory is used for the manufacture of ivory goods, bones and teeth. This supply comes from Assam, Western Ghats and Mysore. Tallow is derived from the fat of beef, mutton and goats. Its printing uses are as an adulterant, lubricant, and illuminant and it is also used in the manufacture of soaps and candles.

There is considerable export and trade in livestock products, while dairy products, such as condensed milk and cream, milk foods for infants and invalids, butter and cheese, comprise the main imports. Bones and horns are exported. At the same time, there is a two-way trade in hides, skins and wool.

PROVINCIAL DISTRIBUTION—The largest number of oxen are found in Uttar Pradesh which possess 23.0 million heads or nearly 14 p.c. of the total for the country. This is closely followed by Bengal, where there are nearly 22.6 million oxen or approximately 13.6 p.c.; Madras 9.6 p.c. of the total. For Buffaloes: U.P.—9.9 million or 29 p.c.; Punjab—6.92 million or 13.2 p.c.; Madras—6.1 million or 13 p.c.; Bengal—1.1 million or 2.3 p.c. of total buffaloes in India.

The densities of oxen per 10 acres of cultivated area, per 100 persons and per square mile of the country as a whole are 4343 and 106 heads respectively. The all-India average density of buffaloes works out to 12, 12 and 30 respectively.

TRADE IN CATTLE—Bengal is the principal importer, followed by Bombay, U.P. and Bihar. The main exporting provinces in order of merit are Punjab, Bihar and Orissa.
LIVESTOCK & POULTRY CENSUS

(Livestock and Poultry in lakhs)

A.—Livestock

<table>
<thead>
<tr>
<th></th>
<th>1956</th>
<th>1951</th>
<th>(c) Young stock</th>
<th>1956</th>
<th>1951</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cattle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Males over 3 years</td>
<td>642</td>
<td>618</td>
<td></td>
<td>1,589</td>
<td>1,551</td>
</tr>
<tr>
<td>(b) Females over 3 years</td>
<td>497</td>
<td>498</td>
<td>(a) Males over 3 years</td>
<td>63</td>
<td>68</td>
</tr>
<tr>
<td>(c) Young stock</td>
<td></td>
<td></td>
<td></td>
<td>1956</td>
<td>1951</td>
</tr>
<tr>
<td>(b) Females over 3 years</td>
<td>223</td>
<td>219</td>
<td>(b) Females over 3 years</td>
<td>448</td>
<td>434</td>
</tr>
<tr>
<td>(c) Young stock</td>
<td>162</td>
<td>147</td>
<td>4. Goats</td>
<td>566</td>
<td>471</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5. Horses &amp; Ponies</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6. Other livestock</td>
<td>66</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total Buffaloes</td>
<td>448</td>
<td>434</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total livestock</td>
<td>3,071</td>
<td>2,922</td>
</tr>
<tr>
<td>3. Sheep</td>
<td>387</td>
<td>388</td>
<td>B.—Poultry</td>
<td>974</td>
<td>434</td>
</tr>
</tbody>
</table>

C. AGRICULTURAL MACHINERY

(In thousands)

<table>
<thead>
<tr>
<th></th>
<th>1956</th>
<th>1951</th>
<th>1956</th>
<th>1951</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ploughs</td>
<td>36,548</td>
<td>31,780</td>
<td>5. Electric Pumps</td>
<td></td>
</tr>
<tr>
<td>2. Carts</td>
<td>10,707</td>
<td>9,863</td>
<td>(for irrigation)</td>
<td>55</td>
</tr>
<tr>
<td>3. Sugar crushers</td>
<td></td>
<td></td>
<td>6. Tractors (for agriculture)</td>
<td>18</td>
</tr>
<tr>
<td>(b) worked by power</td>
<td>21</td>
<td>21</td>
<td>(a) 5 sees &amp; more</td>
<td>93</td>
</tr>
<tr>
<td>(a) worked by bullocks</td>
<td>548</td>
<td>520</td>
<td>(b) Less than 5</td>
<td></td>
</tr>
<tr>
<td>4. Oil Engines</td>
<td>113</td>
<td>95</td>
<td>Seeds</td>
<td>202</td>
</tr>
</tbody>
</table>