

## CHAPTER IV

### AGRICULTURE AND IRRIGATION

The economy of the district is essentially agricultural, as 59.6 per cent (1971 Census provisional figures) of the total population depend on agriculture for their living. The configuration of the land being undulating, the success of cultivation depends upon irrigation for which there is no adequate facility in the district. The cultivators have to depend mostly on rainfall. Besides, they use the age old primitive type of implements. The weak and unhealthy cattle maintained in an uneconomic manner further contribute to backwardness in agriculture.

INTRODUCTION.

The best cultivated lands of Sundargarh are located along the valleys of the two main rivers, the Brahmani and the Ib and their tributaries viz., the Sankh, the Koel, the Safai, the Ichha etc. Out of the total district area of 9,81,000 hectares only 2,19,622 hectares were utilised for cultivation in the *kharif* season and 24,375 hectares in the *rabi* season during 1970-71.

LAND UTILISATION

The statement below gives a picture of land utilisation in the district (1970-71).\*

	(In hectares)
Total cropped area	.. 2,43,997
Area sown more than once	.. 24,375
Fallow	.. 86,600
Forest	.. 5,82,700
Area not available for cultivation	.. 55,800
Other uncultivated land including pastures	.. 75,600

The problem of soil erosion is acute in this district which includes the upper catchment areas of the Mahanadi and the Brahmani. It is estimated that about 130 lakh hectares of land have been affected. Measures to check erosion were started in 1954 with the establishment of a demonstration-cum-training centre at Jharbada. Its main object was to train field workers and other personnel, and to carry out research on problems relating to soil and water conservation. In addition, the centre rendered technical assistance to the cultivators and executed soil conservation measures in the locality. The Training Centre has been shifted to Bhubaneswar since August 1970.

Land reclamation and soil conservation

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\*SOURCE—Directorate of Agriculture and Food Production, Orissa

The anti-erosion measures include contour bunding, tree planting, pasture development, paddy field terracing, stream bank protection, gully reclamation, and construction of structures for silt retention.

Soil conservation in the Hirakud catchment (portions lying in Sundargarh district) was initiated in 1957 around Bargaon in a selected sub-catchment of the Ib river. Subsequently the area of activity was extended to other sub-catchments where soil erosion was acute and required proper attention. Till the end of 1970-71 an amount of Rs. 39,77,444 was spent in implementing various soil conservation measures under the River Valley Scheme covering an area of 3,295 hectares.

The Kuradhi Irrigation Project has a total ayacut area of 3,319 hectares distributed over 22 villages in Lahunipada and Koira Blocks. The ayacut area, having an uneven and falling topography, needs land shaping and levelling. The cultivators are being given cash loans for development of their lands by the Agricultural Refinance Corporation. Plans and estimates for development of these lands are being prepared by the Soil Conservation Organisation. It has been proposed to cover 1,200 hectares with an estimated cost of Rs. 18.42 lakhs.

Sisal plantation has been taken up in only 112 hectares from vast stretches of Government waste lands which are subjected to severe erosion and are unsuitable for cultivation.

Besides, soil conservation measures have been proposed to be taken up in the catchment area of Mandira Dam Reservoir. The survey is being conducted by the soil conservation organisation and a comprehensive scheme costing Rs. 26 lakhs has been prepared.

#### IRRIGATION

There is very little facility for irrigation and the cultivators have to depend mostly on rainfall. The net irrigated area compared to net area sown is only 3.18 per cent. Though the rainfall of the district exceeds 60 inches, the sub-soil water level goes deep down the surface soon after the rains and the land is left dry.

#### Tanks, Wells and Nalas

There are many tanks and *katas* in the villages throughout the district and these are filled up during the rains. These tanks and *katas* are mostly utilised in dry seasons for bathing and drinking purposes and occasionally the water is used for irrigating vegetable gardens by ordinary lift (*tenda*) system. At places, irrigation by small streams is taken recourse to, by means of which the water is diverted and carried into the fields.

Cash loans under Grow More Food scheme were issued for sinking of wells, renovation of old tanks, minor irrigation works other than wells or tanks, reclamation of waste lands and for purchase of plough and cattle. After the discontinuance of the Grow More Food cash loans in 1949-50, the execution of minor irrigation projects were taken up by the Revenue Department. Subsequently the Rural Engineering Organisation has been entrusted to execute all these projects in the district.

The Adibasis who form the majority in the population of the district do not generally carry out together the schemes of artificial irrigation and each individual makes his own petty dam to water his fields. The Agharia cultivators, however, join hands with others to construct reservoirs to irrigate large areas in a systematic manner. In a few cases small hill streams are dammed to irrigate rice crops. Vegetable gardens and sugar-cane fields are irrigated by sinking of wells or by raising water from available tanks.

Sundergarh is one of the six districts of the State which have very low achievements under major and medium irrigation. It has no major irrigation project. Only one medium irrigation project has been taken up at Pitamahal which is likely to be completed soon. Irrigation Projects

The Project is situated at a distance of 15 km. from Rourkela. The estimated cost of the project is Rs. 157 lakhs. There are two distributaries which consist of 21 number of minors and sub-minors with a total length of 88 km. This project, when completed will irrigate 4,800 hectares of land. Pitamahal Irrigation Project

During the last 20 years 109 minor irrigation projects have been taken up in the district for construction, out of which 65 projects are providing irrigation, 8 are under construction, and the rest 36 projects have become derelict. The total ayacut now being commanded by minor irrigation is 8,237 hectares in *kharif* and 1,315 hectares in *rabi* season. The Kuradhi Irrigation Project located at Koira in Bonai subdivision is the largest minor irrigation project in the district at present. It has been constructed at a cost of Rs. 66,75,000 and irrigates about 2,800 hectares in *kharif* and 280 hectares in *rabi* season. Among the projects now under execution the Ichha Project in Lefripara Community Development Block is of importance. When completed it will provide irrigation to 2,400 hectares in *kharif* and 400 hectares in *rabi* season. Minor Irrigation Projects

Besides the minor irrigation projects mentioned above there are 53 very small projects in the district and they irrigate about 600 hectares of land.

Irrigated  
Area

Irrigated area from various sources (1969-70) is 8,211 hectare which is split up as follows. \*

	(In hectares)
Government canals	.. 1,023
Private canals	.. 228
Tanks	.. 1,234
Wells	.. 462
Other sources	.. 5,264

Soil

The soil of Sundargarh, on the whole, is not very fertile except in the river valleys. The northern part of the district, which is occupied generally by the tribal people, the soil is less fertile. Mixed red and black soil, red sandy soil, gravelly and lateritic soil are found in this area. The mixed red and black soil contains a large quantity of calcium and magnesium carbonates, but is generally deficient in nitrogen and phosphorous. The red sandy soil, gravelly, and lateritic soils are generally deficient in potash, phosphoric acid and lime. Soil are in general open in texture and well drained. Plenty of iron concretions are present in the soil.

The soil of Sundargarh subdivision is productive in the Ib valley towards the south, and here the skillful and industrious Agharias make the most of their land. In the northern portion, the soil is less fertile and the cultivators are at a disadvantage owing to the ravages of wild animals. The cultivated lands in Panposh and Bonai subdivisions are along the river valleys, with a few small scattered areas in valleys lying between the hill ranges.

CLASSES OF  
LAND

The cultivated lands of the district are classified as *bahal*, *berna*, *mal*, *goda*, and *baribagait*. Short description of them are given below:—

**Bahal** *Bahal* is a term used for flat land at the bottom of a depression or drainage line. The best *bahal* lands called *pani bahal* are served by reservoirs and so are secure from crop failure.

**Berna** The term *berna* denotes lands towards the bottom of a depression, which receive the drainage from the slopes on either side and also from drainage line between them. *berna* lands are classified into two classes viz., (i) *berna*, (ii) *pani berna*. The only degree of comparison between these two is that *pani berna* gets more percentage of water.

**Mal** *Mal* is the embanked land and slopes which are terraced to catch the surface drainage coming down from uplands. The lower *mal* lands called *pani mal*, get excellent drainage and grow good varieties of rice.

\* State Bank of India—Survey Report on Sundargarh District.

*Goda* is generally the uplands of the area, entirely depending on Goda rain water. These lands are used for crops which are less dependent on moisture. It is more suitable for *rabi* cultivation.

The *Baribagait* is generally the homestead land ordinarily used as Baribagait kitchen gardens. Besides, lands which are used for growing vegetables, and fruit orchards are also called *baribagait*.

The principal crops of the district are paddy, maize, wheat, ground-nut, mustard, potato, kulthi, mung and biri. The area under different crops and their yield-rate are given in appendix I.

Paddy is the most important crop of the district and occupies 85 per cent of the total cultivated area. There are three regular paddy crops, viz., Godadhan or high land paddy, autumn paddy and winter paddy. High land paddy is sown at the commencement of the rains i. e., in June-July and harvested towards the last part of September. The autumn paddy is sown in June and harvested in October. The winter paddy is grown on low lands known as Bahal, and is sown or transplanted in July-August and harvested in November and December. There are many promising varieties of local paddy, viz., Sonakhadika Jhilli, Karpurbasha, Chinamati, etc. Besides these local varieties, improved varieties of paddy such as T.842, T.90, T.1242, T.141, etc., have become popular among the cultivators. High yielding varieties were introduced in this district since 1967 Kharif season and have been widely accepted by the cultivators. Particularly, the short duration high yielding varieties viz., Padma, Ratna, Bala etc., have been found to be very suitable for this district and have been successfully incorporated in the cropping patterns of various climatic zones. Total area covered under paddy crop during 1971-72 was 2,08,204 hectares, out of which 4,385 hectares were under high yielding paddy, 70,447 hectares under improved paddy, and the rest 1,33,372 hectares were under local paddy. The average yield of high yielding paddy and local paddy are 20 qtls. and 7.5 qtls., per hectare respectively. To a very limited extent another kind of rice crop known as 'Dahidhan' is grown on forest lands by the hill tribes mostly in Bonai subdivision. For this no ploughing is required; the trees are cut down and burnt on the land and the ashes are mixed up with the surface soil. The seed is put as soon as the rain commences. But after about two years such lands become exhausted and new plots have to be prepared afresh.

Wheat is the next important cereal crop of the district. It is sown in October after the cessation of monsoons. High yielding varieties viz., Safed Lerma, Lerma Rajo, S.308, Sonalika, Sarabati, Sonara, S.64, S.63, Kalyan-Sona etc., have been introduced in the district since 1967,

and these varieties are gradually replacing the earlier introduced Pusa, and red grain high yielding varieties. During the *rabi* season of 1971-72, an area of 1557 hectares was put under the improved varieties introduced since 1967. Only a small area of 378 hectares was sown with the red grain high yielding variety of wheat. The average yield is 18 quintals per hectare.

#### Other Cereal

Among other cereals grown in the district mention may be made of maize, Jowar, Bazra, and Ragi. Maize is the most important among these crops. The introduction of composite maize varieties, viz. Bikram, Vijaya, Jawbar, etc., have helped the cultivators in getting a higher yield by using their own seed stock. During 1971-72 an area of 85 hectares was put under composite maize, where as the local varieties were cultivated in 2,135 hectares. The remaining crops cover an area of nearly 2,000 hectares.

#### Pulses

Green gram (Mung), blackgram (Biri), horse gram (Kulthi), arhar and gram are cultivated in the district. Their yield is not sufficient even to meet the local needs. Pulses are cultivated both in *kharif* and *rabi* seasons and cover an area of about 700 hectares.

*Mung* and *biri* are usually sown in the last part of August and first part of September. These crops do not thrive well due to comparatively colder climate prevailing from September onwards, particularly in the year in which heavy rainfall is received. A very small grained variety of *mung* locally known as *barai* is sown in July on a very limited scale. 'Pusa Baisakhi', a short duration variety (65 days) was introduced during the *rabi* season of 1970-71 and the result was promising. It is well suited to three crop pattern and can be sown from February to March. The produce can again be utilised for June sowing. Seeds of the variety have been supplied to the local cultivators for large scale multiplication. Similarly the short duration T.9 *biri* variety is also expected to gain popularity and the seeds are under multiplication in the seed farms of the district since 1971-72.

#### Oil-seeds

Groundnut, mustard, sesamum, and castor are cultivated as oil-seed crops. Groundnut is the most important and is cultivated both in *kharif* and *rabi* seasons. During 1971-72 groundnut was sown in 1,728 hectares of land mainly by two improved varieties, viz., S. B. 11, and AK 12-24. Mustard covered an area of 1,467 hectares. Sesamum and castor covered 1,038 and 108 hectares respectively. The short duration mustard variety M-27 has gained popularity as the plants are short in height and give good yield within 75 days. It is also taken as a mixed crop with high yielding wheat. Besides, oil is also extracted from *kusum* and *mahul* seeds obtained from the forests.

Sugarcane, cotton, jute and groundnut are the principal commercial crops of the district. Potato, chillies and tobacco are also cultivated on a limited scale. Commercial crops

Sugarcane is grown luxuriantly in some of the river valleys and in homestead lands. The molasses extracted are highly esteemed and exported to great distances. The noticeable feature in the manufacture of *gur* in the district is its reduction to solid lumps which look very attractive. Improved Coimbatore canes have not yet replaced the local varieties to an appreciable extent. The area under this crop is 305 hectares and the annual yield is 1,754 tonnes of gur (1971-72).

Cotton, which was once being grown extensively in the district is found no more in such large scale though short-staple variety is still grown in some dry areas. In recent years improved long-staple varieties have been introduced, but the area under cotton is reduced as the cultivators are not interested in its cultivation due to extensive use of mill-made yarn. The soil of the district is not suitable for jute cultivation but during recent year its cultivation in some suitable areas have proved a moderate success. Potato, chillies and tobacco are also cultivated in a small scale. Tobacco is grown only for local consumption. The local varieties however, are of very good quality.

Country vegetables such as pumpkin, brinjal, arum, sweet potato, ridge gourd, little gourd, plantain, onion etc., are grown during rainy season. Winter vegetables like cauli flower, cabbage, carrot, french bean and potato have also become very popular among the cultivators and are cultivated mostly in the Agharia villages of the Sundargarh subdivision. Vegetables

Mango, lemon, guava, banana, papaya, orange and pineapple are grown in this district. Grafts and seedlings of various fruit plants are sold to the farmers every year through the Agriculture Department. A progeny orchard and a fruit nursery have been established at Sundargarh and Kuliposh respectively to supply fruit grafts and seedlings. Fruits

Grow More Food Campaign, Banamahotsava, and crop competitions etc., have created incentive among the cultivators. Introduction of high yielding and short duration varieties of crops is also an important factor for the progress of agriculture. Cultivators are gradually feeling inclined to adopt improved methods of cultivation by use of better seeds, manures and implements. Fruit gardens as a source of income were almost unknown a few years back, but are gaining popularity with the annual observation of Banamahotsava. During the past few PROGRESS OF SCIENTIFIC AGRICULTURE

years, several orchards have been started at different places, and cultivation of vegetables is widely undertaken. Farmers are now almost accustomed to chemical fertilisers for better yields of potatoes and other vegetables. Fallow lands are gradually being brought under cultivation.

Japanese method of paddy cultivation was introduced in the district and it gained popularity among the farmers. During 1961-62, 1,319 hectares of land were covered by this method of cultivation and the number of cultivators who adopted it was 2,484. Gradually many high yielding varieties of paddy, wheat, maize, *jowar* etc., were introduced from 1967. During 1967-68 the area under high yielding paddy was 1,124 hectares and the area increased to 4,385 hectares during 1971-72.

#### Agricultural Implements

Traditional agricultural implements of various types are still in vogue. The general backward condition of the agricultural class, their poverty and want of adequate irrigation facilities are responsible for the non-mechanization of agriculture in the district. The cultivators prefer the age old implements like country plough, *kodali*, *khurpi*, and *sikle* as they are mostly manufactured by the village smiths, and carpenters and are mended easily. The farmers are gradually becoming acquainted with modern implements. The number of various agricultural implements, available from statistical report \* is given below :

Wooden plough	..	1,05,160
Iron plough	..	1,592
Sugar-cane crushers	{	(bullock driven) 522
	}	(power driven) 143
Carts	..	15,379
Oil engines	..	20
Electric pumps and pumps for tube-wells		50
Tractors	..	6
Oil crushers (Ghani)	..	579

#### Methods of cultivation.

Generally the farmers follow the age-old method of cultivation. The country plough is still the only implement which is used in all kind of cultivation though mechanized cultivation through tractors has been recently experimented in a small measure by well-to-do cultivators. No crop except small patches of vegetable gardens in homestead land

\* Statistical Abstract of Orissa, 1969, p. 600-601



is grown during the hot season as the soil gets very hard and water becomes scarce. Paddy is the main crop of the land and ploughing generally begins in summer to get the land ready for sowing. The seeds are sown broadcast though varieties of winter rice are sometimes sown in July in nurseries and then transplanted. Weeding in the fields where early varieties of paddy are grown, begins early in the monsoon and after the monsoon settles paddling operation in the fields sown with winter rice is undertaken with country ploughs having pointed plough shares. *Rabi* cultivation is done on *goda* lands towards the end of September but the yield is generally low. In the irrigated areas like Lahunipada and Koira, high yielding varieties of paddy are taken up in *rabi* season. The broadcasting method as adopted in 1971-72 is being followed in the cultivation of high yielding paddy. Similarly the line sowing of high yielding wheat adopted till 1969-70, which needed at least one interculture i. e., hoeing is now replaced by broadcasting. This method gives comparatively better yield.

Most of the cultivators in this district raise a single crop (mainly paddy) in a year during *khariif* season and keep the land fallow for the remaining period. Only a few well-to-do farmers raise more than one crop in a year. Demonstrations have been conducted in cultivator's fields under various schemes by the Agriculture Department during the past few years. In 1970-71 inputs (investments of goods and services) worth Rs. 8,500 were supplied to cultivators and multiple cropping with the cropping pattern: Padma paddy-M.27 mustard-SB. 11 Groundnut was adopted in an area of 42 hectares. Similarly during 1971-72 inputs worth Rs. 7,100 were supplied under diversification of cropping pattern demonstration. Intensive Agricultural Area Programme and multiple cropping was adopted in an area of 16.4 hectares. Out of the total demonstration area, the cropping pattern : Padma paddy-M. 27 mustard-SB. 11 groundnut was followed in 10.8 hectares and the cropping pattern : Padma or IR. 8 paddy-high yielding variety wheat-Pusa Baisakhi *mung* was followed in the rest area of 5.6 hectares. Such demonstrations have a good impact on the cultivators and create initiative for intensive cultivation.

ROTATION OF CROPS

Increased attention is being paid by cultivators to the quality of seeds and seedlings for better production with the introduction of high yielding varieties. More and more area is being covered under high yielding varieties of paddy, wheat, maize, and jowar etc. The nucleus seeds for the purpose are supplied by the Agriculture Department. The cultivators also raise their own seeds and collect by mutual exchange.

SEEDS AND MANURE

Seeds

Quantity of seeds supplied (categorywise) to the cultivators by the Agriculture Department during 1970-71 and 1971-72 is given below :

Category of seeds	Quantity supplied (in quintals)	
	1970-71	1971-72
High yielding paddy ..	557	300
High yielding wheat ..	135	156
M-27 mustard ..	20	13
Groundnut ..	210	295
Composite Maize ..	2	..

#### Manure

Cow-dung still remains the principal manure. Oil-cake and silt of old tanks are also applied in the fields. With the efforts of the Agriculture Department the local cultivators are gradually using compost which is usually a mixture of cow-dung, ashes, leaves and house-hold refuses. During 1970-71, 1,52,000 tonnes of compost were prepared in the district. Green manuring of paddy fields is also becoming popular. In 1970-71, 6,285 hectares of land were green manured with sunhemp and *dhanicha*. In recent years the use of chemical fertilisers like ammonium sulphate, calcium ammonium nitrate, super phosphate and potash etc., are increasing. The district consumed 583 tonnes of chemical fertilisers during 1969-70. The consumption went up to 2,286 tonnes in 1971-72. The main drawback of extensive use of chemical fertilisers is want of proper irrigation facilities.

#### PLANT PROTECTION

Almost every year paddy crop is attacked by stemborer, gallmidge jassids and gundhy bugs. Sugar-cane is affected by stemborer and top short borer. Mustard is affected by aphids. Groundnut falls prey to the attack of termites, whit-grads and aphids. Besides, grass-hoppers, caterpillars and various types of pathogenic bacteric, fungi and virus cause a lot of damage to different crops.

Protection of crops from the ravages of pests has become easier with the help of modern pesticides. During 1970-71 an area of 7,600 hectares was covered under plant protection measure. Insecticides and pesticides alongwith dusters and sprayers have been stored in Community Development Blocks and also in Grama Panchayats within easy reach of cultivators at times of need. Damage to crops by wild animals, specially by elephants, wild boars and bears is also common in hilly areas of the district.

#### IMPROVEMENT OF AGRICULTURE

The district is deficient in various crops like fruits, vegetables, pulses, oilseeds and wheat. The prospect of any long term agricultural development is associated with adequate irrigation facilities, supply of improved

seeds, fertilisers, manures, and adoption of improved techniques of scientific agriculture.

The area commanded by irrigation is 7,850 hectares in *kharif* season and 1,588 hectares in *rabi* season (1969-70). It has been envisaged to increase irrigation facilities to 17,180 hectares during *kharif* and 4,528 hectares during *rabi* by the end of the 4th Five-Year Plan period (April 1969 to March, 1974). The cultivators of the district own 360 diesel engine pumps (5 h. p. capacity) and 3 electric pumps (20 h. p. capacity).

There are four small seed farms located at Sundargarh, Bargaon, Rajgangpur and Kendudihi with a total area of 80.94 hectares ; and a large farm located at Kuliposh of 334.28 hectares for production of nucleus seeds. There is a progeny orchard at Sundargarh with an area of 6.87 hectares for supply of seedlings and grafts to the cultivators. Besides, a fruit nursery on 4.85 hectares of land is attached to the Kuliposh farm and two transit nurseries are located at Sundargarh and Panposh.

AGRICULTURAL FARMS

To popularise and propagate the improved agricultural practice and the use of improved seeds, manures, and implements annual exhibitions are held at district headquarters or Community Development Block headquarters. The successful cultivators are awarded prizes which give them incentive to improve.

AGRICULTURAL EXHIBITIONS AND SHOWS

Though special loans for the Grow More Food campaign were discontinued from 1949-50 cash loans under Agriculturist's Loan Act, and Land Improvement Loan Act are regularly given to deserving tenants.

STATE ASSISTANCE TO AGRICULTURE

The Agriculturist's loan was intended for the purchase of seed or cattle or for any other purpose connected with agriculture. Later this loan was also advanced for rebuilding of houses of the agriculturists, if the houses were damaged or destroyed by flood.

Land Improvement loan is advanced for any work which adds to the letting value of land. The land improvement work includes construction of wells, tanks, and other works for storage of water, preparation of land for irrigation, reclamation of land for agricultural purposes etc.

Joint farming on co-operative basis was started in the district since 1956-57 and 3 such societies were registered till 1960. During 1966-67 there were 6 Joint Farming Co-operative Societies having 21 land holders and 100 agricultural labourers as members. These societies had 137 hectares of land of which 98 hectares were under cultivation.

CO-OPERATIVE FARMING

There was irrigation facility in only 29 hectares. They invested a capital of Rs. 27,715, out of which Rs. 21,396 was provided by the State Government. At present (1971-72) the number of societies has been reduced to three, located at Kukuda, Budelkani and Timadihi, and only 24 hectares are being cultivated. Their working capital is Rs. 35,535.

Each individual society has its own problems. Sometimes they also liquidate due to strained relations among members or for reasons beyond the control of the society. However, the future will speak about the success of this movement in the district. At present, the experiment may be treated as a failure.

#### NATURAL CALAMITIES

Ravages by famines and scarcity due to frequent droughts and occasional floods have created havoc in the economic and social life of the people. The rivers in this district flow down to plains and no flood usually occurs. Only when there is widespread heavy rain in catchment areas they overflow. Drought and attacks of insect pest are the main causes of crop failure. There is very little second crop except paddy which is cultivated in *kharif* season. When paddy crop fails the cultivator becomes helpless. Moreover most of the agriculturists own very small holdings and they supplement their income as agricultural labourers on other's fields. When agriculture deteriorates they become unemployed. Worse is the case with landless labourers who have nothing to fall back upon. Much remains to be done by way of repair, renovations or construction of minor irrigation works for storing up an increased volume of water and make it available for irrigation with the ultimate aim of insuring against drought caused by deficient and ill distributed rains and also to raise a second crop or to raise money crops.

Worst calamities of the present century (20th.) are discussed below.

#### Flood of 1943

The highest flood in living memory was seen in the river Brahmani in August 1943. The flood affected 66 villages, the worst affected being San-Kansara. Crops were badly damaged over an area of 240 hectares. On the otherhand, about 400 hectares were benefitted by the deposit of silt. The Durbar Administration organised gratuitous relief to supply food to the victims of flood, and seedlings for transplantation of the damaged fields. Considerable help was given in the shape of Taccavi loan and house building advances.

#### Flood of 1960

Unprecedented rain from 15th to 18th August, 1960, caused a heavy flood in the river Brahmani. It caused considerable damage to an area of 600 hectares. The affected people were given help in the shape of loan

and subsidies. To provide employment various development works were undertaken by the State Government.

Heavy rains during 1971 caused high floods in the rivers Ib, and Sankh. The agricultural areas and several villages were flooded. The damage was more intensive in Panposh subdivision. To render help to the affected people of the subdivision test relief works were undertaken through Blocks and 3 Projects at an estimated cost of Rs. 38,000. Flood of 1971

Bonai subdivision was in the grip of severe famine in 1908 due to failure of crops caused by drought. DROUGHT  
Famine of  
1908

In 1954 the total rainfall in the district was 34.75 inches. The average monthly fall during the period May to September was 6.75 inches. Nearly 827 square miles (2,142 sq. km.) in the three subdivisions of Sundargarh, Panposh and Bonai were affected involving a population of 2,68,223 having an average outturn of 6 to 8 annas (40 to 50 per cent). Drought of  
1954 and  
1955

In 1955, rainfall was freakish and not enough for either transplantation or interculture of paddy plants. As a result, paddy crop of Mal and Gora lands in Sundargarh subdivision and that of Panposh subdivision suffered to some extent. The yield of crop on above lands in Sundargarh subdivision was about 50 per cent and that in Panposh was 37 per cent. But the yield on other classes of land such as Bahal and Berna was better. The crop condition was not normal in as much as the average crop condition on all classes of land was 50 per cent of the normal crop.\*

Due to the alarming situation prevailing for two consecutive years the economy of the district was upset. Relief was given to the people in various ways. Loans were advanced to encourage *rabi* cultivation wherever possible. Mid-day meal centres were started for school-going children and for persons old, infirm and in indigent conditions. Relief works were also started for providing employment in the distressed areas.

There was a failure of winter rains. This was followed by failure of pre-monsoon rains in the early months of 1972. The long dry spell in the first few months damaged the crops, particularly, early millets and other food crops grown by Adivasis and poorer sections of the community. As a result of continued dry spell water and irrigation sources were dried up. Prices of food grains began to Scarcity of  
1972

\* Drought in Orissa during 1954 and 1955—Final Report

rise in the western districts. Sundargarh along with some other districts developed scarcity conditions and required test relief, agricultural loans and other assistance.

Relief  
measures

Various types of relief measures were undertaken including gratuitous relief, provision for test relief works, and agricultural loans. During the period from 1st April 1972 to 15th June, 1972 Rs. 7 lakhs were allotted for test relief, and rupees ten thousand for gratuitous relief. Rs. 2,50,000 has been allotted for the district during 1972-73 under the Agriculturists Loans Act. The CARE Feeding Programme for children, and expectant and nursing mothers continued to meet the needs of various situations, and 1,41,460 people have been benefitted by this organisation till August, 1972.

ANIMAL  
HUSBANDRY

The local breeds of cattle are generally stunted in growth and are not well cared for. Bullocks and buffaloes are employed in ploughing, the latter being specially useful in tilling hard soil. Cows and she-buffaloes are prized for their milk. Goats, sheep and pigs are reared for table purpose. Ponies were used for riding by a few well-to-do people in the past but they are now scarce, owing to the introduction of bicycles on a large scale. These ponies were of small stature, but were hardy. Poultry keeping is a common practice with the Adibasis and the local breeds require almost no care for their survival.

The livestock population (according to Livestock Census, 1966) are given below.

Cattle	..	4,72,636
Buffaloes	..	75,828
Sheep	..	56,299
Goats	..	2,44,144
Horses and ponies	..	5,890
Mules	..	129
Donkeys	..	892
Pigs	..	19,441
Fowls	..	5,51,265
Ducks	..	5,522

Fodder

There are extensive areas of forests and waste lands in the district. Plenty of green grass is available for the cattle to graze during the rains. Every village has its own pasture (*gochar*). Cattle of all categories graze upon it throughout the year. Acute shortage of grass is felt after the rains and they remain underfed during the summer

months mostly depending on paddy straw. In recent years particular attention is being given to preserve the greens in form of silage and hay. Silo pits have been dug at various veterinary centres for demonstration. Moreover cultivation of perennial grasses like elephant grass, napier grass, anjan, *kanchan* etc., have been taken up by the State Government. The Soil Conservation Department have introduced grass cultivation in village waste lands. A pasture centre has been established near Panposh in 1966-67 where grass, maize, jowar and cowpea are cultivated as fodder crops to meet the requirements of the Rourkela city.

Milk yield of the local cows is very meagre and they remain dry for most part of the year. Generally the cows are neglected and preference is given to bullocks because of their utility in agriculture. Till recently no systematic attention was given by the local people for improved breeds. Good cows and she-buffaloes were only found with a few rich business men who had come from outside the State, or with a few affluent people. Milk Supply

During 1968 there were 1,14,909 cows in the district out of which 42,969 were milch cows and the rest 71,940 were dry.\* The average daily milk yield of a local cow is 1/4 litre.

A small dairy farm was started at Sundargarh in 1939 by the Durbar administration. There were 13 Sindhi cows, 2 bulls, 6 male and 6 female calves during 1940, with the idea that in course of 3 to 4 years the ex-State would have a model breeding farm and will be able to distribute bulls for improvement of the local variety. The farm was almost of a private nature and was meant for supply of milk to the palace. It was closed in 1948. A small dairy farm was also maintained for a few years at Kuarmunda by the ex-Zamindar. Nothing tangible was done to encourage dairy farming in this district till 1957, and in that year the State Government launched a scheme of subsidised dairy. Under that scheme a person from Kalunga started a small farm with six milch cows and a Red Sindhi bull. The milk produced was marketed at Rourkela but the unit continued to function for a short period. Dairy Farms

A dairy farm has been established by the State Government at Kuarmunda at a distance of 19 km. from Rourkela during 1966-67. It maintained pure breed of Haryana cows and Murraha buffaloes. These Haryana cows are being artificially inseminated with the Jersey breed at present. The cows and heifers are often sold on auction

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Source—District Statistical Hand-book, Sundargarh, 1968.

and young bulls for breeding purpose are supplied to the Utkal Gomangal Samiti to be distributed in rural areas. It was originally planned to keep 694 heads of cattle and to supply about 1,500 litres of milk daily to Rourkela City maintaining 300 milch animals throughout the year. At present only 200 litres of milk a day is produced. 200 hectares of land have been provided for this farm, out of which 40 hectares have been reclaimed for growing different fodder crops.

Another dairy farm is going to be established by the State Government at Sundargarh. Besides, the Government farm at Kuar-munda, there are a number of private dairy farms at Rourkela and Rajgangpur run mostly by people of the neighbouring States and a few local milkmen of the district. A *gosala* has been established at Rajgangpur. Its primary objective is to take care of old and invalid cattle.

#### Cattle Breeding

The Veterinary and Animal Husbandry Department maintains 31 Red Sindhi bull centres at different parts of the district for improving the cattle breeds. Besides, there are 5 Artificial Insemination sub-centres, where Jersey semen is being supplied from Cuttack. A Key Village Unit with 10 sub-centres at Rourkela and its neighbourhood are conducting artificial insemination.

#### Sheep and Goats

Sheep and goats are reared by the people mainly for mutton. The sheep are of non-woolly type. The goats are of Black Bengal breed and yield very little milk, barely sufficient for their kids. These goats produce kids twice a year dropping twins and triplets.

A goat-multiplication farm was started at Sundargarh in 1957-58 with a view to augment supply of mutton to Rourkela, but it was later discontinued as the local breeds did not survive well under farm condition. To upgrade the local goats, Betal bucks were supplied to the people in many villages.

#### Poultry

Poultry keeping is almost a hereditary occupation with the Adibasis who constitute the bulk of the population in the district. They keep poultry mainly for the purpose of offering sacrifice and gambling through cock-fights. The eggs are either consumed by them or are sold in village markets. The modern idea of keeping poultry for profit is novel to these people. The Veterinary and Animal Husbandry Department maintains some poultry units from October to March to supply hatching eggs of white Leghorn breed to the local people. There is also a Departmental Poultry Unit at Koira. It supplies eggs, laying pullets and breeding cocks.



In 1958 the Regional Poultry Farm at Sundargarh was started with pure white Leghorn breed. At present it possesses 2,000 adult birds and 20,000 chicks. The farm caters to the needs of various poultry development projects of the districts of Sundargarh, Sambalpur, and Keonjhar. Hatching eggs, laying pullets and breeding cocks are supplied to Departmental Poultry Units, Block Poultry Units, All-India Poultry Development Centres and also for Expanded Nutrition Programme. Besides, eggs and birds are sold for table purpose. This farm is managed by the Veterinary and Animal Husbandry Department.

Regional Poultry Farm, Sundargarh

A project was started in 1965 to provide loan and technical assistance for establishing 200 poultry units on commercial scale near Rourkela. 52 units, each consisting of 100 layers, were started at Rourkela, Birmittapur, Hatibari, Kuarmunda and Kalosihiria. Within a few years 50 per cent of the units were closed down and the scheme was discontinued. At present the Government poultry farm at Kuarmunda supplies birds, chicks, eggs and premixed poultry feeds. There are about 600 private poultry farms having 7,000 birds located at Jhirpani, Jalda, Balanda and Kalunga.

Intensive Egg and Poultry Production-cum-Marketing Centre

A poultry feed mixing centre has been established at Sundargarh to supply balanced premixed feed to different poultry farms and private poultry keepers of the northern districts of the State. The unit is managed under the administrative control of the Deputy Director, Poultry Development, Orissa.

Poultry feed mixing centre

The common contagious diseases of the cattle in the district are rinderpest, haemorrhagic septicaemia, black-quarters, anthrax, and foot and mouth disease. The incidence of rinderpest is not severe as it can be prevented by Goat Tissue Vaccine. Haemorrhagic septicaemia and black-quarter generally occur during rainy season. A large number of cattle are infected by foot and mouth diseases, but cases of fatality are few. Mostly the old and invalid animals are left to their fate and are uncared for. The principal poultry diseases are ranikhet and fowlpox. The former is a virulent type of disease, which spreads rapidly and takes a heavy toll.

Cattle and Poultry diseases

A statement showing number of attacks and deaths from animal diseases has been given in Appendix II.

To check Rinderpest disease the cattle are being vaccinated with Goat Tissue Vaccine. One Check-post has been established at Kuarmunda to vaccinate cattle coming from outside the State. The

technical staff of different hospitals, dispensaries, and Stockman Centres also vaccinate animals and birds to immunise them against various contagious diseases.

Tables showing number of cases treated in different veterinary institutions and vaccinations done are given in Appendices III and IV.

Veterinary  
Institu-  
tions.

There is only one veterinary hospital in the district located at Sundargarh. Besides, there are 19 dispensaries and 46 stockman centres. A list of all these institutions with their location is given in Appendix V.

Cattle fairs  
and shows.

Since 1948 cattle shows at the district headquarters and sub-divisional headquarters are being held regularly to encourage people to possess improved breeds.

A cattle fair sits every year at Bonaigarh during the Chaitra Parva festival (April) where large number of cattle are brought for sale.

FISHERIES

The district depends upon inland fisheries for the supply of fish, inland waters like rivers, *nalas*, tanks and *katas* being the main sources. During summer most of these tanks dry up creating considerable obstruction to pisciculture. Fish from outside the district are imported in large quantities to meet the local needs especially in the industrial areas of Rourkela, Rajgangpur etc. In recent years pisciculture is being taken up by various Grama Panchayats in their respective areas on a commercial basis. Trade in dry fish is carried on in the district by traders coming from Sambalpur and even from some coastal districts of the State. Small varieties of fish obtained chiefly from paddy fields during rainy season are occasionally dried and sold by a caste known as Jhara. There are a number of fisherman families in the district who fish from rivers, tanks and swamps and sell them in local markets. In 1961, there were 489 (310 males 179 females) fishermen in the district.

Varieties of fish available in the district have been given in Chapter I (General).

Implements

Traditional fishing implements, like bamboo traps, nets and angling rods are in common use. During recent years nylon nets and different types of floats made of plastic and rubber have been introduced in the district. The Fisheries Department is supplying fry dragnet, fishing nets, gill nets, shooting nets and plankton nets.

Breeding  
Centres

There is no breeding centre in Sundargarh and the fry is obtained from the centre at Sambalpur by the Fisheries Department. Some fishermen also collect fry from rivers in a small quantity. The Fisheries Department have started three Pisciculture Demonstration Centres located at Sundargarh, Bonaigarh and Tudaloga. These farms consist

of some nursery tanks, rearing tanks and stocking tanks. These three centres are the source of supply of fry. Eight lakhs of fish fry were supplied to different Grama Panchayats during 1971-72. Some Grama Panchayats have also taken interest in fry culture in their own nurseries. The Kenaveta Grama Panchayat in Bonaigarh Block produced 66,000 of pituitary fry during 1971, and a nursery centre has already been constructed by the Talsara Grama Panchayat in Balisankra Block for fry culture in 1972.

Oxygen packing with plastic bags have been introduced by the Fisheries Department for safe transportation of fry to distant places.

The present district of Sundargarh was a very inaccessible tract having no proper communications before the advent of the Bengal Nagpur Railway (now South Eastern Railway). The tribal people living in the area subsisted for the most part on shifting cultivation which meant wanton destruction of forests. There was no regular department to deal with the forests, into which the local people had free access to destroy what they liked. The outstanding event in the history of the forests of the district was the construction of the Railway in 1883 and this gave rise to great demand for forest products. About this time the Durbar Government levied a forest cess on tenants of Gangpur ex-State for the supply of timber for their domestic requirements. The Railway Company required large quantity of timbers for which an Inspector was appointed to collect royalty from the company and to control the activities of the forest contractors who used to cut the trees irrespective of size and marking. Till about 1890 the forests of the Gangpur ex-State were regarded as the property of the ruler but with timbers assuring an ever increasing importance as a source of revenue, the Zamindars put forward their rights in their respective areas and their claims were recognised by the then Divisional Commissioner of Ranchi. Attempts were made to regularise the operation of the contractors. On the initiative of the Commissioner, regular terms of contract ranging from 10 to 15 years were fixed but no provision was made for proper management of the forests. In 1908 efforts were made to organise a Forest Department by appointing two Forest Rangers and 13 Forest Guards. A Land Revenue Settlement was in progress at the time and the opportunity was taken to declare several forest blocks as reserved forests. The work of demarcating these forests continued for the next 10 years. In 1920 a set of forest rules were published. The next mile stone was the preparation of the working plan under the guidance of H. F. Moony, who

FORESTRY

revised the plan in 1948. With the inauguration of the Forest Department and introduction of forest rules, the subject of conservation developed on scientific lines.

In Bonai a few rules were framed for the management of the forests during 1892 when the contractors worked in the forests for supply of sleepers to the Bengal Nagpur Railway (now South Eastern Railway). These rules provided for the division of the forests into reserved and unreserved areas and restricted the rights of the tenants in the reserved forests. Proper management and controlled felling in both reserved and unreserved forests commenced in 1918. Prior to that there were long-term leases hampering conservation. It was only in 1931 that the first preliminary working plan of the Bonai forests for systematic working and regulation of exploitation in the reserves was prepared.

At present the forests are being managed and worked according to the prescription of a well regulated working plan.

During the period of war forests were recklessly destroyed inspite of well-regulated plans in furtherance of war efforts and timbers of all sizes were removed for military purposes.

The management of the forests of both Bonai and Gangpur was taken over by the State Government with the merger of the States on 1st January, 1948.

Ex-Zamindari  
Forests

There were six estates within Sundargarh division, and three in Bonai division where the estate holders enjoyed rights over the forests.

After the abolition of the zamindaris all these forests were merged with their respective forest divisions excepting Hemgir and Sarapgarh which were being managed by the Revenue Department. Subsequently these two forest areas were included under the jurisdiction of Sundargarh Forest Division.

Improvement  
of forest in  
the economy  
of the  
district.

The people of the district depend upon the forests to a great extent. Their requirements consist mainly of timber for house building, agricultural implements and bullock-carts; bamboo for fencing, roofing, and basket making; grass for thatching and rope making; and fuel for the kitchen. Demand for grazing is also met from the forest.

The poor people search out from the forest edible roots, leaves, fruits and flowers for their living. The carpenters, basket makers and blacksmiths require timbers, bamboos and firewood in large quantities than the ordinary cultivators for their profession.

A part from the excellent revenue obtained from sale of forest produce, the various works taken up in the forests involve utilisation of manual labour. In the season when labour is not utilised for agriculture people get employment in various works of the forest like picking of *kendu* leaves, cutting of timber, rearing cocoons and *lac*. Other minor forest produce like myrabolan, *mohua* flowers and seeds, *dhatuki* flowers, resins, etc. are collected by the local villagers and sold or bartered in the weekly markets in exchange of salt, rice and other necessities.

Forest  
produce

The principal forest produce of the district are timber and *kendu* leaves. *Sal* timber is exported in the form of sleepers, poles, logs, pit-props etc. Logs of *bija*, *bandhan*, *sisu* and *gambhari* have also good markets outside the district. There are various kinds of forest produce like *kendu* leaf, *sabai* grass, *lac*, *tassar*, *myrabolan*, *mohua*, *kusuma* seeds, resin and catechu. Of these, *Kendu* leaf brings the largest revenue. Bamboos are exported mostly from the *Kunjar* range of *Bonai* division. In *Sundargarh* division bamboos are not abundant except in a region to the extreme west, on the border of *Hemgir ex-Zamin-dari*. Elsewhere there are a few stunted clumps which meet the ordinary requirements of the people. Charcoal is exported in huge quantities although the industry is of comparatively recent origin.

Exports of forest produce are made mainly through roads and railways. Facilities of road communication have solved the difficulties to a great extent and the timbers are easily removed to the rail heads by motor trucks. Attempts made to float sleepers down the *Brahmani* river have failed due to rapids and rocks with which the river abounds in this district up to its entry into the *Talcher* subdivision of *Dhenkanal* district.

Rights and  
concessions.

The rights and concessions enjoyed by the people of the district in different classes of forests vary widely from area to area. *Nistar* (forest cess) is a commutation of payments to be made by the tenants for free use or use at concessional rates of timber and other forest produce from the *Khesra* or 'B' class Reserves. The royalty for taking bamboos by tenants vary from 0.50 paise to Rs. 2.00 per hundred.

In 'A' class Reserved forests of *Bonai* division unreserved species at half of scheduled rate are supplied to the tenants if the same are not available in *Khesra* forests. *Thatch* grass and *sabai* grass are supplied to tenants at half the scheduled rate. In *Khesra* or unreserved

forests reserved species are given at half of the royalty. Firewood, bamboos, minor forest produce and timber of unreserved species are allowed free, excepting the minor forest produce prohibited for collection. Grazing of cattle is allowed free. There is no restriction in collecting edible fruits, roots and flowers in both the reserved and Khesra forests.

In 'A' class Reserved forests of Sundargarh division, the tenants living close to the forest are allowed to collect dry firewood, edible fruits, roots and leaves without payment on condition that they render service in extinguishing fire, and cutting boundary and fire lines. The tenants have to pay a fee of Re. 1.00 and Re. 0.75 per head of buffalo and bullock respectively. In 'B' class reserved forests, the cess payer gets plough timber and timber of unreserved species from annual coupes free for his personal use. In Khesra forests the cess-paying tenant is allowed to remove unreserved species, fire-wood and minor forest produce freely.

Marketing  
of forest  
products.

In the past practically the whole outturn of the forests was in the form of sleepers. With the exception of *sal* a few other economic species were being extracted in the log form. The principal market for the sleepers was the Railway.

With the establishment of the steel plant at Rourkela, construction of Bandamunda-Dumarao Railway line, establishment of a mining township at Barsuan, and execution of several other construction works demand for timber has increased considerably. Timbers are also exported to Calcutta, Jamshedpur, Asansol and various other places outside the district. The coal fields of Jharia and the copper mines at Musabani provide a good market for pit props.

Minor forest produce is generally leased either annually or for more than one year to contractors. Kendu leaves, though a minor forest produce, has attained considerable importance and the revenue derived from it has increased enormously during the last decade.

All the forest coupes in Sundargarh Forest Division are worked out by the Orissa Forest Corporation Ltd. It has established the saw mills in this division. Besides local supply large quantity of timber, fire wood and charcoal are exported. A Kendu leaf unit is being worked out by the Forest Corporation since 1971. In Bonai Division the Corporation is the main lease holder of timber coupes.

The following statement shows the revenue earned from forests of the districts during 1971-72.

Name of Forest Division	Revenue earned (in rupees)			Total
	From Timber	From Kendu leaf	From Other Sources	
Sundargarh ..	3,45,148	20,35,740	11,10,271	34,91,159
Bonai ..	9,67,565	4,96,544	2,71,473	17,35,582

## APPENDIX I

## Area, Production and Yield Rate of different crops for the Agricultural year 1970-71\*

Sl. No.	Crop	Area (in hectares)	Production (in tonnes)	Yield Rate (quintals per hectare)
1	Rice	180336	142532	7.19
2	Wheat	1293	2313	18.0
3	Ragi	1615	807	5.0
4	Maize	2447	1767	7.2
5	Jowar	1645	825	5.0
6	Bajra	227	114	5.0
7	Small Millets	7327	2198	3.0
	<i>Total Cereals</i>	194890	150556	7.8
8	Gram (Bengalgram)	2069	828	4.0
9	Tur (Arhar)	3364	1346	4.0
10	Green gram	2359	406	1.7
11	Black gram	5103	1021	2.0
12	Horse gram	7051	1763	2.6
13	Cowpea	178	44	2.5
14	Field pea (Rabi)	117	35	3.0
15	Other Rabi Pulses	40	8	2.0
	<i>Total pulses</i>	20281	5451	2.6
16	Sweet Potato (Rabi)	2321	11605	50.0
17	Onion	949	2372	25.0
18	Other Kharif Vegetables	4406	35248	80.0
19	Other Rabi Vegetables	4467	31046	69.5
	<i>Total Vegetables</i>	12602	84172	66.7
20	Mangoes	2610	35510	..
21	Bananas	1026	5570	..

\* Source—Director of Agriculture &amp; Food Production, Orissa



22	Citrus Fruits	..	24	50	..
23	Papaya	..	24	372	..
24	Cashewnut	..	2,195	373	..
25	Other Fresh fruits	..	34	..	..
	<i>Total fruits</i>	..	5,913	..	..
26	Groundnut	..	1,392	1,483	10·7
27	Sesamum/Gingilley ( <i>Til</i> )	..	2,453	942	3·8
28	Castor	..	321	128	4·0
29	Niger	..	1,580	461	2·9
30	Mustard	..	1,194	478	4·0
	<i>Total oilseeds</i>	..	6,940	3,492	5·0
31	Chillies	..	833	407	4·9
32	Coriander	..	214	64	3·0
33	Garlic	..	105	262	25·0
34	Ginger (dry)	..	30	22	7·5
35	Turmeric	..	122	390	32·0
	<i>Total Condiments and Spices</i>	..	1,304	1,145	8·8
36	Jute*	..	51	168	3·3
37	Mesta*	..	937	4,123	4·4
38	Sunhemp*	..	109	272	2·5
39	Cotton*	..	132	198	1·5
	<i>Total Fibres</i>	..	1,229	4,761	3·9
40	Sugarcane	..	659	3,295 (gur)	50·0 (gur)
41	Tobacco	..	179	89	5·0

\* Production and yield rate of fibre crops are in bales ( 1 bale—180 kg. )

## APPENDIX II

## Attack and death from animal diseases (1966-67 to 1970-71)

			1966-67	1967-68	1968-69	1969-70	1970-71
Haemorrhagic Septic- aemia.	Attack		69	81	37	40	18
	Death		48	64	19	30	10
Black Quarter	.. Attack		17	Nil	5	5	4
	Death		24	Nil	4	5	4
Anthrax	.. Attack		23	11	104	100	Nil
	Death		14	9	51	100	Nil
Foot and Mouth Disease.	Attack		Nil	225	7,866	Nil	22,833
	Death		Nil	Nil	4	Nil	Nil
Rinder Pest	.. Attack		43	37	Nil	Nil	Nil
	Death		24	28	Nil	Nil	Nil
Ranikhet Disease	.. Attack		Nil	Nil	30	272	301
	Death		Nil	Nil	30	Nil	182
Foul Pox	.. Attack		Nil	Nil	Nil	Nil	Nil
	Death		Nil	Nil	Nil	Nil	Nil

APPENDIX III

Cases treated in different Veterinary institutions during 1966-67 to 1970-71

	1966-67	1967-68	1968-69	1969-70	1970-71
Number of cases treated including in and out patient.	136,759	155,595	166,090	166,669	177,810
Number of cases supplied with medicines.	14,518	29,488	33,443	37,816	49,238
Number of castrations performed at headquarters.	20,418	21,746	20,698	25,993	29,902
Number of villages visited.	22,838	11,616	11,968	11,558	12,759
Number of cases treated on tour—					
(a) Contagious ..	2,457	6,487	11,579	4,545	23,408
(d) Non-contagious	83,234	91,467	94,721	45,821	96,644
Castrations performed on tour.	18,785	19,005	20,882	21,301	25,52

## APPENDIX IV

## Vaccinations and Inoculations (1966-67 to 1970-71)

		1966-67	1967-68	1968-69	1969-70	1970-71
Haemorrhagic Septicaemia.	..	40,667	59,095	74,373	14,5372	12,9957
Black Quarter	..	12,169	22,399	14,442	12,107	30,555
Rinderpest	..	3,435	3,157	2,729	393	175
Anthrax	..	381	219	2,397	16,42	1,821
Ranikhet Disease	..	6,761	12,094	22,682	15,700	44,516
Foul Pox	..	1,295	2,284	3,406	5,798	8,051

APPENDIX V

List of Veterinary institutions

Sl. No.	Name of Block	Location of Hospital/ Dispensaries	Location of Stockman Centres
1	Sundargarh	.. 1. Sundargarh (Hospital)	1. Bhedabahal 2. Kundukela 3. Balakmal 4. Birbira 5. Majhapara 6. Kinjirima
2	Hemgir	.. 2. Hemgir	1. Kanika 2. Gopalpur 3. Laikera 4. Toporia
3	Lefripara	.. 3. Lefripara	1. Nuadihi 2. Dumabahal 3. Gundiadihi
4	Tangarpali	.. 4. Tangarpali	1. Sanpatrapali 2. Mahulpali 3. Mangaspur 4. Nialipali
5	Balisankra	.. 5. Balisankra	1. Talsara 2. Bandega 3. Bandhabahal 4. Sagabahal 5. Sikajore 6. Kinjirkela
6	Sabdega	.. 6. Sabdega	1. Rajpur 2. Karmdihi 3. Kiralaga
7	Bargaon	.. 7. Bargaon	1. Itma 2. Ekma 3. Sahajbahal 4. Barangakachar 5. Salepali
8	Kutra	.. 8. Kutra	1. Panchara 2. Biringatoli 3. Latalaga 4. Khatkurbahal
9	Rajgangpur	.. 9. Rajgangpur	1. Kukuda 2. Kutunia 3. Malidihj

Sl. No.	Name of Block	Location of Hospital/ Dispensaries	Location of Stockman Centres
1	2	3	4
10	Bisra	.. 10. Kansbahal 11. Bisra 12. Rourkela	1. Barsuan 2. Jareikela
11	Kuarmunda	.. 13. Kuarmunda 14. Birmitrapur	1. Rajboga 2. Kacharu 3. Andali
12	Lahunipara	.. 15. Lahunipara	1. Darjing 2. Khutgaon 3. Mahulpada
13	Bonai	.. 16. Bonai	1. Kenaveta 2. Ruguda 3. S. Balang 4. Badgogua
14	Koira	.. 17. Koira	1. K. Balang 2. Patmunda 3. Cengula 4. Jamdih
15	Lathikata	.. 18. Lathikata	1. Birkera 2. Ramjodi
16	Gurundia	.. 19. Satkuta	1. Sole 2. Jarada 3. Chandiposh 4. Narendra 5. Tamra
17	Nuagaon	.. 20. Hatibari	1. Sorada 2. Nuagaon 3. Khuntgaon