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not get any land to cultivate. These surplus cultivators most of whom would be artisans, must be rehabilitated on small and large scale industries. The reorganisation of village industries in the context of general economic development would give enough work and income to the village artisans who in the present deteriorating state of their crafts and arts look upon agriculture as their last resort.

Thus from the point of view of reorganising our agriculture what is more important is to concentrate our attention on uneconomic cultivators. If a successful solution to their problem is sought out, the new setting of agricultural organisation would have potentialities of such a growth that with the application of scientific methods to agriculture, the twin aim of greater production and contented rural population can be realised.

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## AGRICULTURAL STATISTICS

*by*

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[This paper embodies the results of a study of Land Records of 10 villages of the Kaira District in Gujarat, carried out by the Gujarat Division of the Agricultural Economics Section of the University School of Economics and Sociology, Bombay, in 1946-47. Its publication prior to the World Agricultural Census proposed to be conducted in 1950 under the auspices of the Food and Agricultural Organization of the United Nations' Organization will, it is hoped, focus attention on the reorganization of our agricultural statistics and the collection of the right type of data under the census. Our thanks are due to the various Government Departments and officials and social workers for their valuable co-operation and help in the work of the Enquiry.]

## HISTORY

Agricultural statistics of Gujarat have no separate history of their own. Their origin and evolution have been linked up with that of the Bombay Province. The compilation of Agricultural Statistics in Bombay began with the settlement of land revenue. It was the Moghul King Shah Jehan who introduced, for the first time in the year 1637

A.D. what was known as the Akbarian System of survey and settlement in the Deccan. Land was measured with standard measures and assessment fixed for ten years. The Maratha rulers thereafter made a slight improvement on it and fixed separate rates of assessment for irrigated land, garden land and land growing opium and sugarcane, although the system of farming out the revenue which they adopted left the revenue system in a ruinous state towards the conclusion of their reign. However, the statistical records of these periods are not available.

A great step forward in the history of agricultural statistics was taken by the British. Between 1824, and 1828 Mr. Pringle, the then settlement officer, introduced a new method of survey and settlement which included not only the measurement of area of land but also the calculation of the estimated yield and cost of cultivation. His efforts did not succeed due to the complicated method that was followed. But the procedure was improved upon at the time of carrying out the revision survey of the Indapur taluka of Poona in 1835. As this revised method became the basis for subsequent settlements in the Province uniform data relating to the settled Government lands, began to be available.

Nearly a century and a quarter old history of agricultural statistics since 1835 to present day can be broadly divided into three periods with the years 1835, 1862 and 1882 as important landmarks. The first period of the history of the agricultural statistics may be said to have begun with the year 1835 when the revised method of revenue settlement was introduced. The British realised that, in addition to serving as basis for land settlement, agricultural statistics were necessary for the successful running of the administration of the country. Moreover, the task of revenue collection was getting progressively difficult every year, because in the absence of reliable data, the revenue demand in most cases tended to be much in excess of the farmer's ability to pay. But as this formative period coincided with rapid territorial gains, Government efforts to collect statistics remained unplanned and uncoordinated. With the comparative stabilization of the administration after 1857, the Government got time to expand their activities when new departments were opened which began publishing some statistics in their annual reports. This spur in the activities of collecting statistics may be said to have ushered in the second period of the history of agricultural statistics. It should at the same time be said that the statistics collected did not present a connected picture. They were more in the nature of accounts of departmental activities than statistics in the modern sense of the term. The survey and settlement reports provided data relating to the extent of cultivated and uncultivated lands.

Detailed maps of the area of each village were drawn up and boundaries of every field were determined. Data relating to the size of the individual farmer's holding could also be known. However, as the settlement was to be revised only at the end of 30 years, and as no provision was made for recording changes in ownership and use of land during the interval, at the time of the revision survey the data was usually out-of-date. Besides, the settlement of talukas was undertaken at different times which did not enable a comparative study of a region or the country.

Besides revenue settlement, Government ordered the compilation of the District Gazetteers during this period. These contain the history and statistical details of the district. The Northern Division, which included the whole of Gujarat, was the first to begin the compilation in accordance with the order. Their compilation was completed in 1867. Except for the above two attempts no other notable efforts were made by the Government to collect agricultural statistics till 1862. The annual report of the Forest Department which was first published in 1849 did not contain statistics of any great importance.

The severe famine of 1860 served as an eye opener. It stressed the necessity of regular statistics relating to agriculture. In the year 1862, the Government of India appointed a Statistics Committee to draw up village forms for collecting systematic statistical information. *Jama-bandi* forms were the products of this Committee's labours. They were introduced in all the provinces under ryotwari tenure. They contained information on cultivable land, crops cultivated, land revenue, tagavi loans, etc. Later, information on tenures, holdings, seed requirements and crop yields was added. Items relating to cattle, ploughs and carts and their values, etc. were also included in these forms. During the early 'sixties of the last century, the boom in cotton trade impelled the Government to collect and publish data relating to production, trade, and prices of crop, more particularly of cotton. Merchants from Manchester were mainly responsible for the creation of the Cotton Department which brought out its first annual report in the year 1867-68. The Report contained details regarding production of cotton according to varieties, its value and prices in India and abroad, the import and export rates of freight and the consumption of cotton by the local mills. The other reports published during 1862-1882 were the Annual Progress Report of the Public Works Department and the Report on the Administration of the Registration Department. The former contained, among other items, details about irrigation, while the latter supplied data on sales and mortgages of agricultural lands and other properties. The Report on the working of the Talukdari Settlement Department

published in this period is also important because this type of tenure is found in Gujarat alone. The population Census was organised for the first time during this period in 1872. Along with other details, it enables us to know the strength of Agricultural population for the first time.

The Deccan agriculturists' riots led to the passing of the Deccan Agricultural Debtors' Relief Act. This act was made operative throughout the Province. The Annual Report on the Working of the Act, published since 1880 made available some valuable data on indebtedness. In all, during 1862 to 1882, 5 reports were brought out and three new Government departments concerned with Agriculture were created. Thus it was during this period that regular annual agricultural statistics were made available. One of the concrete products of efforts to collect and publish regular statistics was evolution of a system of assessing crop yields suitable to Indian conditions. This has been dealt with in details later.

However, these efforts at collection and compilation of agricultural statistics left much to be desired. These publications were brought out as and when the need for them was felt. There was no central authority to organise this collection, nor was there any agency to check their accuracy. In 1877, when famines occurred, relief measures could not be planned on the basis of Government Statistics, as they were found to be inaccurate. The Famine Commission appointed in 1880 recommended the establishment of a central authority in each province to be responsible for collection, compilation and checking up of various statistics connected with agriculture, more specially the village records.

The third phase of the evolution of agricultural statistics commenced with the establishment of the Department of Agriculture in 1882. The early part of this period was marked by the important activity of organising agencies for collecting and checking up statistics. The newly established Department of Agriculture organised an agency of Circle Inspectors to check the village records. It also undertook the survey of fields and fixed the boundary marks. The Land Records and the Survey and Settlement Department which developed under the aegis of the Department of Agriculture subsequently took over this activity. Between 1882 and 1903, the Department of Agriculture brought out three new annual reports. The Report on the External Land and Rail Borne Trade, which dealt with the trade as well as prices of agricultural commodities, was first published by the Department in 1882. The Annual Report of the Director of Land Records and Agriculture presented statistics relating to cultivation of crops, maintenance of land

records and the cattle and the implements of the agriculturists. The third annual publication of the Department, namely, Crop Experiments gave the results of the researches conducted by the Department and contained, among other things, data relating to cost of cultivation.

The first annual report of the Bombay Veterinary College was published in 1886-87 which contained general information on cattle diseases. However, not much information was available in the form of statistics from this report. In 1892-3, the Civil Veterinary Department published its first annual report in place of the former report which contained information on breeding of horses and mules. Later on, this report included information on the diseases and deaths of cattle according to districts. It also contained prices and total values of the cattle wealth of the Province.

The year 1903-04 has a special significance for the history of agricultural Statistics. Several changes and innovations took place in that year. The Annual Report of the Director of Agriculture and Land Records was split up into three separate reports. The Annual Report of the Director of Agriculture contained results of researches and an account of propaganda work only. The Season and Crop Report contained the bulk of statistics on land, crops, weather, etc. The annual Report of the Director of Land Records furnished information on the maintenance and inspection of village land records. The Record of Rights Act was passed in 1903 and rules thereunder were published in 1904. The Act made it compulsory for all owners of land to register sale and mortgage whether effected orally or under a deed. This made the publication of the annual report of the Registration Department more comprehensive. The Jamabandi Report was renamed as the Land Revenue Administration Report and was divided into three parts. It contained information regarding area and revenue assessment and about rural economic conditions in general. The Co-operative Department was inaugurated in 1904. Its working was reported in an annual publication. This Report contained till 1939 an account of Rural Development after which a separate publication for the purpose was brought out. The report in main contained information on co-operative activity in the province.

Besides the annual reports, a comprehensive statistical atlas was drawn up during this period. By now, it has already run into two editions and its third and revised edition is under preparation at present. The latter phase of the third part of the history of agricultural statistics may be called the period of consolidation, when efforts were made to improve the collection and publication of such statistics. The

revision of the village records was one important reform. The village from No. I, was so redesigned, that it now records every fragment of holding of land as and when it is created. The Maxwell System of writing Record of Rights, which was introduced in 1921-2 made possible the recording of the transfer of each fragment and enabled tracing of the possessor of land. The village forms No. VII and No. XII, were combined into one new register named as *Pahani Patrak* (crop-register). It recorded, besides crops, the terms of tenancy and periods and modes of leases of land. The previous imposing list of forty-two forms was reduced to 18, with a view to achieving greater simplicity and accuracy. It facilitated both the collection as well as inspection of the primary data.

The Agricultural Statistics of India came under close scrutiny of the Bowley Robertson Committee and the Royal Commission on Agriculture of India during this period. Agricultural Statistics were found to be highly defective by both of them, though both the bodies suggested different remedies for their improvement. During the World War II (1939-45), Agricultural Statistics underwent some important changes the most notable of them being the improvement in the method of determining crop yields. A scientific method of determining the yield per acre was evolved and adopted during this period in different Provinces. Till recently, the figures of cultivated holding were not available. The Bombay Growth of Food Crops Act 1944 which was a product of the last war, made it possible to get this figure from the register specially prepared for the purposes of the Act. The importance of cattle census was recognised and the hitherto quinquennial enumeration has been made an annual feature. A Bureau of Economics and Statistics has been started by the Government of Bombay to study special problems relating to statistics, including agricultural statistics. Bulletins published by the Bureau contain the result of independent inquiries into the problems of cultivators' holdings, procurement of food-grains, grain levy and the like.

The last period thus led to the expansion, consolidation and improvement of agricultural statistics. The Department of Agriculture which is the central authority responsible for collection, compilation of agricultural statistics expanded its activities during this period, and published data on different aspects of agriculture. However, it has a limited control over the collection and checking up of statistics. Many important branches of statistics are dealt with by other departments and are therefore beyond its jurisdiction. This divided responsibility and absence of co-operation and co-ordination have resulted into two different sets of figures being obtained on the same aspect leading to



varying conclusions. The defects in the statistical material of the earlier stages of the evolution continue to exist even today. Thus, even though the Department of Agriculture added to the existing quantum of agricultural statistics and improved their quality to some extent, some of the defects like lack of unbiased and comprehensive data, continue to exist even to-day.

### APPRAISAL

The utility of the statistics available from the various published reports is greatly diminished due to certain defects in them. Some of the defects are inherent in the defective statistical system. The available material is not presented in proper form. Besides, important material collected at the source is left out of publication. Further, little or no information is gathered regarding many important items of statistics. Defects like lack of compactness and comparability and delays in publication have crept in, with the chequered evolution of the statistical systems. One of the main reasons of the above defects is that at present agricultural statistics are mainly the by-products of departmental administration.

#### *Defective Presentation*

The defect of presenting the available data is mainly confined to the publication of figures of land transfers and wages of rural labour. Figures of land-transfers, published in the Annual Administration Report of the Registration Department are lumped together with those regarding transfers of other properties. Besides, the above report publishes only the number of transfers and their total values. It does not give the area of land transferred. This makes it difficult to work out the value of land per acre from time to time. The wages of rural labour are collected separately for skilled and unskilled labour and for men and women. It will be shown later that they fail to reflect the real nature of rural wages which (as far as Gujarat is concerned) are largely functional in character. With the figures of wages available at present, it is impossible to build any estimate about the share of labour in the total cost of cultivation.

#### *Comprehensiveness*

A wide gap exists between the statistical data collected at the source and the statistical data published in the annual reports. Many important items of information are left out of publication. The information regarding tenancy is collected in the village about the area, type of tenancy, rent and period of lease. But the same is not available in published form from any of the reports. Details regarding size of

each fragment and the number of fragments per holding are similarly available in the village records. These useful data, however, are not published. Detailed classification of fallows according to causes as well as of wells and tanks according to their uses (drinking, irrigation, etc.) and the reasons for their being out of use are available in the primary records. Such details are useful for the study of the problems of cultivation and their omission from published records especially at the time of food scarcity like the present is acutely felt. The Season and Crop Report gives figures of outturn of food crops only, though the forecast includes figures of outturn of cotton and oil-seeds. An important crop like tobacco is omitted from both. However, figures of its yields are calculated and preserved in the office of the Director of Agriculture. One of the causes of its omission from the published reports seems to be that more than forty years ago when the publication of the Season and Crop Report and production forecasts began, tobacco covered a negligible area. Since then, it has gained in importance both regarding the area it covers and the income it brings to the farmer, which would now justify its inclusion. Between 1900 and 1940, the cultivation of tobacco in Gujarat increased by 384 per cent. Perhaps for more or less the same reasons, figures of production of vegetables and fruits are also not available.

It emerges from the consideration of the above facts, that the importance of the statistics is still not fully realised and in some cases like the Annual Administration Report of the Registration Department more importance is attached to the administrative needs rather than those of the economic analysis. This is further evident from the fact that, the Land Revenue Administration Report, on the other hand, gives minute details regarding collection of revenue which do not directly concern or help the study of major economic problems of the countryside.

#### *Adequacy*

It has been pointed out above that some information not found in the published report is available in the village records. Yet both these sources put together fail to supply information on many important aspects of agricultural economics. Full discussion of this point will be undertaken later. Here it may be mentioned that topics not covered by either reports or records include costs of cultivation, retention of crops by farmers, marketable surplus, produce of cattle, gross income of the cultivator, net profits of farming, nature and value of assets, investment in agriculture and indebtedness of the farmer. There is complete lack of statistics regarding agricultural labour especially with reference to their employment on either permanent or casual basis, their migration

and their income. Figures regarding rural cost of living either for farmers or for labourers are also not available.

#### *Lack of Details*

We discussed above the details which are necessary to make the information on a particular item complete. But there are other details without such information may be complete yet not useful. For instance, the figures of wheat or rice production can be said to be complete as far as production is concerned, but are of little use to the peasants or to the traders. They would like to know, over and above the quantity of production, the production according to different varieties for understanding the market position and its effects on prices. Such details are not collected.

#### *Co-ordination*

Agricultural statistics as already shown are strewn in various reports, with the result that they are available in fragments. This reflects on the unco-ordinated activities of different Government Departments responsible for the preparation of these reports. The defects that proceed from these are several. During the collection as well as the compilation of data no comprehensive view of their use is taken. Further, each Department takes a narrow view of the utility of the data from the point of view of its own Departmental needs. Then there is duplication of data on one item at the one end, and absence of information on important items at the other. We have mentioned above the important items on which statistics are lacking. A further instance of this type of deficiency which is the direct result of uncoordinated approach can also be pointed out. The Annual Report of the Agricultural Department gives description of the schemes and researches undertaken by it, but does not link them up with the production figures appearing in the Season and Crop Report. Similarly, the Veterinary Department publishes in its Report description of cattle diseases and the number of cattle affected. On the other hand, figures of the number of cattle showing the annual increase or decrease are published in the Season and Crop Report. Both put together do not enable us to get the idea about the toll taken by cattle diseases.

#### *Delays in Publication*

Long delays in the publication of agricultural statistics are frequent. For example, the publication of important reports like the Season and Crop Reports is over due for more than 3 years. Delays in publication of other reports extend from one year to over five years. Such delays were the normal feature in pre-war period. War has accentuated the tend-

ency. Little importance is attached to their publication in time. Administrative matters are given preference and this is mainly responsible for the delays.

## II

*MAINTENANCE OF VILLAGE RECORDS*

We have dealt with the history of the agricultural statistics in Bombay Province and some patent defects in the collection and compilation of the same. We shall now examine the question of these statistics in some details. The primary source of all agricultural statistics is the village records and the quality of the statistics as ultimately prepared is largely determined by the accuracy and the care with which the village records are maintained.

*Method of Collection.*

Before we discuss the quality of the data collected it is necessary to briefly outline the methods of collecting statistics. The statistics of cultivated and uncultivated area, crops sown, the names of the owner (or possessor in case the field is given for possessory mortgage) and tenant, the mode of tenancy, the amounts of rent, revenue and concession in revenue, if any, for each field are recorded in the combined register of village form Nos. VII-A and XII locally known as "Pahani Patrak." The figures of areas under crops are entered from the "Pahani Patrak", into the Crop Register which is Village Form No. 13. The consolidated figures from the Crop Register are then annually passed on to the taluk headquarters. The areas under different modes of cultivation from "Pahani Patrak" are transferred to the Tenancy Register, the Village Form No. VII-b. The statistics of area are theoretically supposed to be collected twice a year, during the kharif and the rabi seasons, through a field-to-field enquiry.

*Crop Areas.*

Recording of crop areas is easy except in the case of mixed crops. Mixed crops are grown in a variety of ways. In some cases two or more crops are grown in the same field in alternate rows. In such cases it becomes necessary to apportion an area to each crop according to the proportion its rows bear to the total number of rows. The same principle would apply in case more than one crop is sown in the same field side by side. Counting of rows has to be done in both the cases. In the case of mixed crops sown broadcast or more than one crop sown in the same row, the determination of area under each individual crop is rather difficult. The official procedure is to apportion the area of mixed

crops in proportions prescribed by a schedule. Different schedules are prescribed for different types of mixed crops and they are given particular numbers. The principal crop is entered in the records and the number of the schedule is mentioned against it. Apportionment of areas is done at the time of transferring crop areas from the "Pahani Patrak" to the Crop Register. Besides mixed crops, the difficulty is experienced in apportioning areas between fallows and crops in the case of crops sown in parts of the fields. The rabi crop in some cases and the summer crop in almost all cases are irrigated crops. When, however, water for irrigation is not available in abundance, only a portion of the entire field is put under the irrigated crop. The present practice is to determine the area under the crop by an "eye" estimate. This, however, does not give correct results. The same method is employed in recording areas of fields left partly fallow. The part of the field remaining fallow in the rabi season or summer for the reasons stated above, is also recorded by an 'eye' estimate. Recording of kharif fallows is more or less correct, except in some cases where the talati inadvertently records fields set apart temporarily for sowing late varieties of crops or crops like cotton or tobacco, as fallow. Such instances are not many. Fallows are further classified according to causes giving rise to them. The detailed classification of fallows is passed on by the *talati* to the taluka officer, who in his turn sends it to the Director of Agriculture. Of the uncultivated area, the areas under forest, roads, buildings, and other permanent structures, wells and tanks are more or less unchanging and it is comparatively easy to record them. It is, however, difficult to ascertain the extent of the culturable wastes out of the total land not available for cultivation and in many cases their determination amounts to speculation by recording agency. The culturable wastes are further split up into two classes, assessed and unassessed. The former is termed 'Area definitely known as cultivable'.

#### *Yields of Crops.*

The determination of crop yield has always remained a difficult problem. The present method of assessing yields has been criticised by various writers. Since it is both costly and impracticable to determine actual yield from every field, some method of estimation has to be adopted. In the present method, the yield per acre is determined first and is multiplied by the area under the crop to arrive at the total output. The formula employed for determining yield per acre is as under :

$$\text{Area of the crop} \times \text{Normal yield} \times \text{Seasonal Factor}$$

The normal yield is defined as "that crop which past experience has shown to be most generally recurring crop in a series of years, the

typical crop of the area, the crop which the cultivator has the right to expect and with which he should be content; if he gets more, he has reason to rejoice and if less, he has reason to complain." This is obviously a vague definition. The Manual of Forecasts is not clearer when it defines the normal yield as "the average yield on average soil in a year of average character." The word normal has been substituted here by the word "average" which is equally ambiguous.

In practice, the average or normal yield is determined by what is known as crop-cutting experiments. The selection of the village, the field and the plot is done by a revenue officer. The crop is cut and weighed ordinarily in the presence of a high official. From this as the basis, the average for the taluka is worked out. The averages for the taluka are employed to arrive at the average for the district. The district average is a weighted average. Weights are applied on the basis of taluka figures of areas under crops. The seasonal factor is determined through the *annawari* valuation, 12 annas representing the normal or full crop. The work of determining anna valuation is carried out by the village *talati* and the circle inspector in consultation with a few leading farmers. The anna valuation of a crop for the district is worked out in the same manner as the normal yields for the district.

It may be mentioned here that attempts are being made to improve upon the method of determining normal yield. In the Punjab and the Central Provinces such efforts showed remarkable results. Experiments on similar lines are being carried out in the Bombay Province also since 1943. A beginning was made with paddy and the experiment was to be confined to the Colaba district. The five major crops, wheat, rice, *kharif* and *rabi* jowar and cotton were later covered and the sphere was extended to the whole Province. Experiments will be repeated for five years till 1952 when the final results will be available.

This new method is that of random sampling. The taluka is taken as the unit. Three villages are selected by random method from each taluka, and experiment is confined to three fields from each such village, which are also selected by the same random method. Unlike the previous method, weightage is given according to the area covered by the crops while striking the average for the taluka. The 'standard error', which would give the percentage of error in the results obtained by the random sampling method is calculated while working out the average yield for the taluka.

### *Rent and Tenancy*

We have already observed that details of rent and tenancy are recorded in the *Pahani Patrak*. The information is collected twice a

year along with the particulars of crops. These data are then transferred to the Tenancy Register which is V.F. No. VII-B. Summaries of the Tenancy Register are not passed on to the taluka office every year and are thus not published though they form one of the bases for the determination of assessment at the time of survey and revision settlements. Part of the data on rent and tenancy is published in the settlement reports.

The system of giving land on lease is very old and numerous practices regarding letting land and charging rent have developed around it. These modes are grouped under six heads for the purpose of record. Self-cultivation with or without the aid of hired labour is classed under the first. Cultivation entirely with the aid of hired labour is classed under the second. Modes 3, 4 and 5 deal directly with tenancy. The third mode denotes cultivation on cash rent basis while the fourth mode stands for letting the land on crop-share. A tenancy under which rent is paid in terms of a fixed quantity of produce is classed under the fifth mode. Any other system or systems, which could not be covered under these five modes are assigned the sixth class; it may also be a combination of any two or more of the five modes.

#### *Sales and Mortgages.*

Sales, mortgages and other transfers of land by inheritance, gifts or reconveyance are recorded in the Record of Rights, known as Mutation Register which is the village Form No. VI. Excepting transfers by inheritance, all other transfers come within the purview of the Indian Registration Act and are registered by the Sub-Registrar at the taluka headquarters. Besides land transfers, transfers of properties are also noted by him. The Record of Rights which records transfers of land by inheritance, sale or mortgage is made use of for finding out land values for the purpose of survey settlements. The Record of Rights is a complete document in so far as it records not only transfers by instruments from the monthly statements of Registration sent by the Sub-Registrar but also other transfers effected orally. But it is incomplete in so far as other particulars such as causes of transfer, occupation of the parties to the transaction, etc., contained in the deed are not recorded in it as they are not recognised for the purpose of recording.

#### *Prices and Wages.*

Prices of agricultural produce and salt, iron, fodder, and fuel consumed in the rural areas and draught cattle are collected at taluka towns by the Mamlatdar's office and sent to the Director of Agriculture every month in the Taluka Form No. XVIII. The prices are collected from

the local merchants during first fifteen days of every month. The unit is the seer of 80 tolas and prices are recorded in terms of so many seers per rupee. In the case of fodder, prices are reported in terms of rupees for 100 bundles each weighing about a lb. Prices of bullocks are in terms of rupees per animal. The prices reported in the Taluka Form No. XVIII are retail prices. Prices prevailing during the harvest period are published in the Season and Crop Report. They also serve as basis for the revision settlement.

Besides these, wholesale prices ruling in two important markets of Ahmedabad and Surat are reported by the collectors of these districts in so far as Gujarat is concerned. Commodities covered are mostly major food and non-food crops. Data of wholesale prices are published in the Bombay Government Gazette (Part II). They are used by the Economic Adviser to the Government of India for preparing the Index Number of Wholesale Prices.

Rural wages are reported from the taluka centres every month along with the retail prices, in the Taluka Form No. XVIII. The practice is to consult a few labourers getting wages in cash and to note down their wages. For the category of field labour the information is obtained from farmers. The labourers are divided into three categories of skilled, ordinary and fields workers. Under skilled labourers are included the village craftsmen such as carpenters, blacksmiths, cobblers, etc. The ordinary labourer means a coolie, a village digger, a mason's or carpenter's assistant, an earth worker, a labourer who clears a silt from a water-way or canal or one who makes an embankment. Field labour relates strictly to agricultural operations and includes ploughmen, sowers, reapers, weeders, transplanters, and all workers who are employed in agricultural work. The data relating to wages, however, remain with the statistician to the Director of Agriculture. The only use made of these data by the Government was in 1924 when Professor Shirras investigated into levels of agricultural wages in Bombay Presidency.

#### *Cattle And Implements*

The census of livestock and implements was, till recently, taken at an interval of five years. Since 1945-46 the livestock part of this census has been made an annual feature. Along with agricultural implements this census collects information about handlooms, sugarcane crushers and oil crushers in the rural areas.

We have briefly dealt with the method of collecting and recording primary data relating to agriculture. The statistics as at present collect-



ed and published suffer from the important defects of inaccuracy and unreliability. We shall discuss both these aspects separately.

### *Accuracy*

Errors committed while collecting the primary statistical material have led to inaccuracy in the final figures which, in their turn, do not enable us to draw correct conclusions from them or use them as basis for agricultural planning. In order to assess the extent of error at the primary source of collection, an investigation of the village records was carried out in 8 villages of the Matar taluka and 2 villages of the Borsad taluka of the Kaira district in Gujarat. The results of the investigation are summarised below.

| <i>Description</i>                                | <i>No. of entries checked</i> | <i>No. of incorrect entries</i> | <i>Percentage error</i> |
|---|-------------------------------|---------------------------------|-------------------------|
| Single crop .. .. .                               | 144                           | 16                              | 12                      |
| Mixed crop .. .. .                                | 6                             | 2                               | 33                      |
| Two crops in one field grown side by side .. .. . | 18                            | 11                              | 61                      |
| Second crop .. .. .                               | 29                            | 8                               | 27                      |
| Fallows .. .. .                                   | 22                            | 7                               | 32                      |
| Tenancy .. .. .                                   | 167                           | 65                              | 39                      |
| Total ..  | 386                           | 109                             | 28                      |

It should be stated that these results do not reveal anything beyond the extent of inaccuracy about entries. No attempt was made to estimate the extent of error with regard to the exact areas covered by the different items mentioned in the table.

The main causes responsible for the errors shown in the above table are indifference, negligence or deliberate manipulation of data by the *talati* and lack of thorough check-up on the part of the inspecting authorities. Farmers' apathy in supplying correct data is also partly responsible for these errors.

*Talatis* seldom strictly adhere to the procedure laid down for collecting data. They do not move from field to field to verify crops grown in the fields. This type of negligence gives rise to errors of recording wrong crops. To some extent the *talati* manipulates data to fit in the schedules of the Growth of Food Crops Act. Farmers' unwillingness to give out correct information in regard to tenancy is largely responsible for errors in this connection. A thorough-going check will have double effect. The mere knowledge of it will reduce the number

of errors in the collection of data and of the remaining, many would be corrected during the process of checking up. It will be interesting to analyse these errors further because that will reveal the nature of errors committed and will help us to determine to what extent the records are inaccurate. We shall take up the data of crops first.

| Description                               | Total incorrect entries | Wrong description of crops | Inaccuracy about area | Showing single crop for mixed crop and crops for fallows or vice versa. |
|---|-------------------------|----------------------------|-----------------------|---|
| Single crop .. ..                         | 16                      | 4                          | ..                    | 12  |
| Mixed crop .. ..                          | 2                       | 1                          | ..                    | 1   |
| Two crops in one field grown side by side | 11                      | ..                         | 11                    | ..  |
| Second crop .. ..                         | 8                       | 2                          | 2                     | 4   |
| Fallows .. ..                             | 7                       | ..                         | ..                    | 7   |
| Total ..                                  | 44                      | 7                          | 13                    | 24  |

Instances were detected in which paddy was shown in the records in place of jawar, kodra instead of bajari, jowar or guar for jowar, guar, til and tur. These are the errors of wrong description of crops, and are mainly due to negligence on the part of the *talati*. Incidentally this stresses the need for a personal verification of crops by the *talati* instead of the present method of consulting village menial staff or a few farmers in the matter.

The *talati* is required to indicate the schedule of mixed crops against the principal crop shown in the records. Omission to do so leads to errors in regard to entries about mixed crops. All the seven errors in recording fallows arose from entering crops in place of fallows. For some purpose or the other, the farmers sometimes leave a part of their holding fallow during the *kharif* season on which they either grow late varieties or *rabi* crops. Such alterations in cropping do not come to the notice of the *talati* unless the fields are located near the village or the *talati* is painstaking enough to take a round of the fields during the *rabi* season. Errors of recording crops in place of fallows were five and were confined to two backward villages. Wheat was recorded in place of fallows. It was alleged by the farmers of those villages that it might be a deliberate manipulation of data by the *talati* to show larger acreage under food crops. Strength is lent to this opinion by the results of a check-up of entries of food crops. It was found that in three cases food crops were shown to have been grown on fields on which actually non-food crops were raised. As against this, in no case were non-food crops shown in place of food crops.

Detailed analysis of tenancy data is set out in the following table.

| Description   | No. of incorrect entries |
|---|--------------------------|
| Omission to mention mode of cultivation ..                      | 2                        |
| Mention of wrong mode .. .. .                                   | 24                       |
| Either omission or mention of a wrong tenant ..                 | 12                       |
| Where the nature and/or amount of rent is not indicated .. .. . | 27                       |
| Total ..  | 65                       |

An actual visit to the field will not enable the *talati* to get correct information on tenancy. He is to rely either on the owners of the plots or other farmers who have their lands in the vicinity. This difficulty and the fact that the tenancy data do not come under the close scrutiny of the circle inspectors, are largely responsible for the *talati's* laxity in his duty of exercising enough care to record correct data on tenancy. The village menial staff or a few farmers known to him are his guides in the matter. He mostly records this data without moving out of village *chora*. We had occasions to witness *talatis* pursuing such practice during our investigation. Besides, in case information is not available from any of the above sources they would carry forward the information of the previous year. These practices largely account for the errors regarding mentioning wrong modes and wrong names of tenants. In normal times, this practice would do little damage to statistics. But during the last war and after, the landlords preferred to change the terms of tenancy almost annually, according to profitability or otherwise of the various types of tenancy. Landlords also changed their tenants and in some instances took over some of the leased area for personal cultivation. Such developments received momentum on account of the tenancy legislation which was then contemplated. From fear of losing the privilege of changing their tenants at will, farmers began concealing tenancy and reported their fields as owner-cultivated. The Growth of Food Crops Act also led the landowners to conceal tenancy so that with more lands reported under cultivation with them they would be able to devote a proportionately larger area to the cultivation of non-food crops. For example, the tobacco crop in Kaira tempted farmers to practice this sort of manipulation. The extent to which these two causes led to wrong entries in the tenancy register can be estimated when it is realised that out of 24 errors of this category 6 could be ascribed to these two factors.

An opposite tendency was to show a part of the land actually cultivated by a farmer as hired out with a view to avoiding heavy levy demand of food-grains. This tendency largely obtained among the middle-sized farmers. They would give their lands on hire ficticiously to their sons or other near relatives who would appear as tenants in the Government records. For the purpose of recording information on tenancy this is not technically incorrect. In effect, however, such an arrangement creates false impression about the actual state of affairs in the rural economy by presenting an exaggerated picture of the tenancy situation. The confusion in indicating the modes of cultivation in the crop register can be understood from the following table.

| <i>Description</i>                      | <i>No. of entries</i> |
|---|-----------------------|
| Entering Mode 1 for mode 3 or 5 .. .. . | 5                     |
| "    " 3 or 4 for mode 1 .. .. .        | 6                     |
| "    " 3 for mode 4 .. .. .             | 5                     |
| "    " 4 " " 3 .. .. .                  | 6                     |
| "    " 4 " " 5 or 6 .. .. .             | 2                     |
| <b>Total</b> ..                         | <b>24</b>             |

Errors of entering mode 1 for 3 or 4 were noted in the backward villages where tillers are ignorant and indebted and can be easily made to agree to this arrangement which in the long run is harmful to their interests because it would mean that the land is cultivated by the owners. As against this, errors of recording modes 3 or 4 instead of mode 1 i.e., tenancy in place of owner-cultivation, were reported from large and advanced villages. Errors of stating mode 3, i.e. cash rent, for 4, i.e. rent in kind, arise only out of the practice of writing the same mode year after year when the fact could not be ascertained from the cultivators.

*Data on Rentals*

The lapse in recording data is perhaps very prominently brought out in respect of entries of land rent. Out of 65 entries examined, in as many as 27, rent was not mentioned at all. Data about rent in crop-share is not difficult to obtain, although it is hard to reduce it in terms of cash. On the other hand, information about cash rent is difficult to collect with accuracy. Cash rent sometimes is just interest on the loan taken. Sometimes it is rent and interest combined. For these reasons, both the landlords and the tenants are not quite willing to give out the figures of cash rentals. When, however, this information is disclosed, it is done with a strong tendency to avoid supplying correct statistics.

All these reasons account for inaccuracies in statistics of cash rent. The following figures will substantiate our surmise.

|                                   |    |     |                                  |    |     |
|-----------------------------------|----|-----|----------------------------------|----|-----|
| No. of crop-share entries checked | .. | 53  | No. of cash rent entries checked | .. | 12  |
| No. of incorrect entries          | .. | 14  | No. of incorrect entries         | .. | 6   |
| Percentage error                  | .. | 26% | Percentage error                 | .. | 50% |

The extent of inaccuracy in the entries relating to crop share would not have been so large but for certain reasons. Except for irrigated crops and farming of similar nature where the land-owner's share is a little lower than the usual for the simple reason that the cultivator is required to put in more efforts, the practices of sharing crops between the tenant and the landlord are long established and almost uniform. The landlord receives a smaller share in cash of *rabi* crops for similar reasons. If the *talati* exercises enough care to examine individual cases, errors in regard to crop-share rentals would be less common.

#### *Reliability*

To be perfect in quality, statistical data should not only be accurate but also reliable. Dependable source, flawless method and intelligent collecting and collating agency are the *sine qua non* for obtaining reliable statistical data. A detailed examination of agency organisation will be undertaken later. We shall confine ourselves here to examining the defects of the source and methods of collecting agricultural statistics.

#### *Source*

The farmer is the main source of supply of most of the data entered in the village records. Though he is often not an educated person he can be relied upon to supply information regarding the nature of crops, tenancy, number of cattle, implements, etc., which do not require any calculation. The village records as maintained at present note mostly such data. Of late, however, a psychology of taking official measures with suspicion has developed. The cultivator feels that legislation touching him expects him to sacrifice some of his vital interests without giving him anything in return. In his zest to preserve them, therefore, the farmer today wishes the village records, in so far as they concern him, to be so manipulated that the rapid tide of agrarian reforms would leave him materially unaffected. For these reasons it is extremely difficult to secure correct and reliable data. The calibre of the village *talati* is much too low to combat these difficulties and assure recording of as correct statistics as possible. It is not his fault. Looking to the quantity of work he has to do and his training, this work is beyond his capa-

city. For all these reasons it is not wrong to say that the element of unreliability of the source is on the increase.

### *Method*

The method of collecting statistics at the source is defective in several respects. It is not unlikely that the procedure laid down officially might itself be defective in parts so that even though the data may be authentic they will fail to present a correct picture of the situation. Data may be incorrect because the procedure prescribed may not be laid down in details, leaving a good deal to the discretion of the collecting agency. It is also possible that on account of defective definition of the terms used in the village records the data collected are defective. It would be appropriate to deal with the last type of defect more fully.

### *Defects of Procedure*

We have already discussed the defects of the general procedure followed by the village *talatis*. Very few of the *talatis* go round the village site and check the data supplied by the farmer. We have also dealt with the procedural defects in regard to recording of areas under mixed crops and partly fallows. In recording data on tenancy, for example, no cognisance is taken of sub-tenancy. Although sub-tenancy would not be widely prevalent in the predominantly *ryotwari* area of Gujarat, in the backward regions it does obtain in a good measure. A big holder of land in the backward village who does not cultivate his land himself is reluctant to trust cultivators of the backward class. He, therefore, selects a few respectable cultivators and leases out his land to them in big lots on either cash rent or for a fixed quantity of produce. These cultivators, then sublet these lands to small cultivators on crop-share. During our investigation it was observed that the records made no mention of such sub-tenancies in a large number of cases.

We have earlier described the procedure adopted for determination of yields. The methods of determination of both the standard normal yield and seasonal factor in terms of *annawari* valuation are biased. Discretion of the revenue officers is allowed to play decisive role, with the result that a tendency has developed to under-estimate an adverse seasonal factor and to over-estimate the favourable one. The officials are on the whole disinclined to deviate to any great extent from the normal. Moreover, there is a direct connection between the *annawari* valuation on the one hand and the land revenue collection and compulsory procurement of foodgrains on the other. Both of them are responsible for manipulation of the estimates of yields. Of course, a provision has been

made for an appeal by the cultivators against the official estimates, but this facility is hardly taken advantage of, the important reason being the ignorance of the bulk of the farmers about the method although it has been in use for a very long time. There is, besides, a desire on the part of the farmers to avoid clash with the authorities as far as possible unless the *annawari* calculation of yields arises out of the complicated procedure adopted. In official terms, '12 anna crop' is regarded as the ideal or full harvest. The official standard yield is an imaginary quantity. Relating it to the present crop by *annawari* is only a mental process. Both the normal yield and the anna valuation are therefore difficult to be understood by an average cultivator. The right course, therefore, would be to replace this method by another which arrives at the requisite results in terms of current weights or measures such as the maunds and the seers. The efficiency of the latter method has been proved useful in other provinces where it has been given a trial.

#### *Incomplete Data*

The gap in the available statistical data exists either because the scope is deliberately kept limited as in the case of computation of data relating to crop yields or their collection at the source is not made comprehensive. For example, figures of outturn of crops are available for only a few major crops. Estimates of yield are prepared for only major cereals, millets and pulses. No estimates are prepared for outturn of minor grains. Similarly, in the case of the non-food crops, estimates are available for cotton, sugarcane and oilseeds only. Tobacco is excluded from the publication of the forecasts of yields. No estimates of production are prepared for fodder and condiments and spices.

The deficiency regarding the incompleteness of data on account of absence of recording as many items of interest as possible is perhaps glaring. It is not enough to report a tenancy being on crop share. There are a number of variations of the practice. These relate to terms of tenancy other than share in the crop. They may be a share in the fodder, fuel and fruits of the trees or landlord's contribution towards expenses on seeds, manure and irrigation. It will be aggregate of these that will determine the actual rent and hence rent recorded without the ancillary information would not be of full significance. Similarly, recording of sales and mortgages of land along with the cash consideration but without the other terms of the deeds does not give full information about such transfers. Out of 35 entries of sales investigated only 18 related to normal sales. In the case of the rest, one or the other factor mentioned below appeared to have carried weight taking away from it the significance of the actual price recorded. Following are the details about land transfers which were studied.

| <i>Description</i>  | <i>No. of sales</i> |
|---|---------------------|
| Sale to relatives .. .. .   | 2                   |
| Sale with encumbrances—such as taccavi loan, etc. ..  | 1                   |
| Exchange .. .. .  | 1                   |
| Conditional sale .. .. .  | 1                   |
| Sale for non-agricultural use .. .. .   | 4                   |
| Sale to tenant .. .. .  | 1                   |
| Sale to neighbours .. .. .  | 1                   |
| Sale which included additional payment by way of the price<br>for trees, court fees, etc. .. .. . | 2                   |
| Sale of <i>Narva</i> land .. .. .   | 1                   |
| Sale to an outsider .. .. .   | 1                   |
| Cases where the factors leading to the sale could not be as-<br>certained .. .. .                 | 2                   |
| Normal sale .. .. .   | 18                  |
| Total ..  | 35                  |

Transactions of some of the above categories such as exchange of land, conditional sale, sale of *Narva* land, etc., are at present separately recorded. For want of proper scrutiny by the *talati*, however, the rest are recorded as normal sales. Besides, details about the caste, profession and residence of the parties, extra consideration for court fees, trees, etc., are not collected. Without this additional information, the data recorded at present will not serve any purpose beyond protecting the rights of buyers and sellers. It is also not possible to obtain an adequate picture of the nature and extent of land transfers from agriculturists to non-agriculturists from these records.

#### *Unrepresentative Data*

Certain aspects of agricultural statistics which are collected at present lack representative character. This characteristic is dependent upon the source and the time of collection and the unit chosen to serve as a sample. Judged from these standards, statistics of agricultural prices and wages, for example, would leave much to be desired. These figures are further robbed of their usefulness because the prescribed method for collection is not employed in practice. This will be clearly brought out by an actual illustration. In one sense agricultural prices are those prices that are actually received by the farmers for their crops. The farmers usually sell wholesale in an unorganised market and mostly on the spot. When, therefore, retail prices of primary commodities prevalent at the urban and semi-urban centres are published as those realised by the farmers, they would give an entirely false picture. When these prices are utilised either as basis for research or to gauge level of the gross income of the farmers for determining Government's land revenue demand, we would be working on premises far removed from the



real conditions. The retail merchant in the town is the source of the supply of data on prices. This agency is not the same every time the prices are reported, and with him also changes the basis of reporting. Thus, both quantity of the estimate and uniformity suffer. The Mamlatdars are required to supply the statistics of prices to the Director of Agriculture by the 15th of every month. There is, however, no fixity about the day or time to which they should relate. Because of the absence of this stipulation, it was noted during the investigation that they were collected on any day from the 1st to 15th of a month. The same holds good about the agricultural wages also. Information about them is not collected at regular intervals. The source of obtaining them is ever more reliable than that for furnishing data of agricultural prices. Wages of the skilled rural labourers are those obtained by artisans like carpenters, blacksmiths, cobblers etc., working in the towns. The statistics of wages of unskilled labourers are obtained from farmers who happen to visit the taluka 'kacheri' at the time they are got together. Such data would not be representative of the area to which they are supposed to relate. The rates of wages that these farmers would furnish would be said to prevail at the most in the villages to which they belong. Besides, as the same parties do not furnish the information every time, rates cannot be said to be always uniformly reported.

The unit of payment is also not adequately taken account of while collecting the data. Wages are reported in cash. In case of wages in kind they are converted into cash at the ruling prices. But in both the cases no note is taken of perquisites paid to the labourers. In actual fact both wages in cash and kind, and the perquisites given vary not only from place to place but often from farmer to farmer. These are also different for slack and busy seasons, so that we have ranges of levels of wages and systems of payment. All these shades will not be even partly reflected under the existing practice of reporting data once a month and computing them under certain broad lines on an unsystematic sampling basis. We may say in general that apart from minor variations, the practice of paying wages and perquisites in a village are determined by the patterns of crops and the status of the labourers and they can be grouped under a few broad classes. And if such data are collected more often than once a month depending upon seasonal variations such as during the harvest period, and at least relating to certain representative villages and an average struck for the taluka, such data would be nearer the actual conditions obtaining in the rural areas than the statistics published at present.

There is also the need to set right one important defect about the categories of labourers under which the statistics of wages are collected.

The broad categories of skilled, ordinary and field labour do not give us an idea about the differences in wages that prevail for different types of agricultural operations. It is essential, therefore, to split up the last category into ploughmen, weeders, reapers, etc.

#### *Defective Classification.*

It will be appropriate to say something about the lack of knowledge about the nature and purpose of certain statistics that are collected. An information required is sometimes wrongly or inadequately grasped and this leads to either wrong data being collected or data being classified wrongly, with the result that such material does not convey anything or gives us a false picture of a certain situation. A consideration of the classification of uncultivated and cultivated lands will help us to understand the significance of these remarks. There has been some confusion in the definition of cultivable waste and area 'definitely known as cultivable.' It is not uncommon to find grass-lands and the village commons set apart for grazing the village to be bracketed as culturable wastes. Similarly, the field boundaries, particularly in the case of rice-beds, produce fodder for the cattle. A practice of leaving out a broad stretch of land on the borders of the fields to grow fodder for the livestock obtains in the Kaira district. These are grasslands for all practical purposes and should be classed as such. In actual fact, they appear in the records as culturable wastes or sometimes as cultivated lands. Similar irregularity exists in respect of "area definitely known as cultivable" which is a new sub-classification of culturable waste recently introduced. It has been universally recognized that there has been some overlapping in regard to "culturable wastes", "area definitely known as cultivable" and "lands not available for cultivation" and it has been found that on closer scrutiny, it would be possible to transfer the land of one class to the other and *vice versa*. A comparative examination of figures of these classes of land over a number of years would reveal that they vary considerably from year to year making the confusion worse confounded with the passage of time. The obvious explanation for this state of affairs would be that the collecting agency lacks a clear idea about the definitions, with the result that they are not able to group the fields under appropriate heads.

### III

#### ORGANISATION

Hitherto, we confined ourselves to the consideration of defects relating to the methods and procedure of collecting agricultural statistics.

We shall now examine the organisation in charge of collection, compilation and inspection of these figures.

The Government maintains an elaborate machinery to collect, compile, inspect and publish the statistical data relating to agriculture. It covers the Revenue, Agriculture and Land Records departments. The Village Accountant variously known as *Talati*, *Kulkarni* or *Patwari*, is the base of the whole organisation. His primary duty is to collect statistics of revenue and agriculture and to record them in the prescribed village forms. Statistics relating to co-operation and those relating to deaths and births in the village are maintained by the secretary of the village co-operative society and by the village revenue police patel, respectively. While collecting information from the cultivators, the *talati* has to see that the facts he records in the village books are correct and authentic. To ensure this he is expected to move from field to field at least twice a year and make personal enquiry especially in regard to data on crops and tenancy. In addition to this, he has also to collect the land revenue and instalments of *taccavi* advances. It is also a part of his duties to watch, detect and report breaches, if any, of the law, rules and regulations formulated by the Revenue Department from time to time.

The circle inspector is the second link in the statistical organization and the immediate superior of the village *talati*. Although the circle inspector functions on behalf of the Land Records Department, he is under the direct control of the Revenue Department. On behalf of the Land Records Department, he is entrusted with the duty of inspecting fields, marks and boundaries as well as to put up new ones when an existing survey number is divided into fragments. He also keeps an eye on the unlawful encroachment on the Government lands by cultivators and also settles disputes among cultivators about encroachments. He has to inspect the Government and private waste lands. He also inspects the Mutation Register (Record of Rights). In this connection he checks up all the entries relating to land transfers, after consulting the parties to the transactions. The up-to-date recording of Mutation Register facilitates his task at the time of revision of survey settlements.

A number of duties are carried out by the circle inspector on behalf of the Revenue Department. He tests the accuracy of the V.F. Nos. VII and XII (*Pahani Patrak*) and audits the 'khatavahi', the book of Revenue Accounts, to check up collection and outstandings of land revenue. He also checks up the Birth and Death Register. The *tauika* office of the Revenue Department makes reference to the circle inspector concerned when some personal enquiry or verification is to be made in respect of revenue or irrigation matter. Whenever some new data are to be ob-

tained from the villages under the circle inspector, the work of arranging for their collection is entrusted to him. He has to handle the correspondence relating to these and other matters already dealt with in the previous pages. He has to guide the *talati* in his day-to-day work.

Higher up in the hierarchy are the *aval karkoon*, the *mamlatdar*, the district deputy collector and the district collector. Of them, the *mamlatdar* is the main inspecting authority responsible for checking the village records. The *aval karkoon* assists him in his work and moves in the villages when the *mamlatdar* is pre-occupied at the headquarters. He holds the same authority as that of the *mamlatdar* for inspecting the village records. The district deputy collector has to manage a group of talukas. In addition to his other duties he supervises the proper maintenance of the village records. The collector acts as a deterrent to laxity in properly keeping the village records and the performance of their duties by the officials under him through regular scrutiny of reports and an occasional check-up on the spot. The statistics collected by the village *talati* are sent to the taluka office where they are checked, scrutinised and grouped together and then passed on to the district office. At the collector's office they are further checked and consolidated in the prescribed district forms and passed on to the Director of Agriculture or the Revenue Commissioner as the case may be. In spite of the elaborate organisation maintained to collect and compile statistics, accurate and reliable data are not available. Let us examine the defects that are responsible for the imperfect nature of statistics. These may be broadly described as inadequate and unsuitable personnel in the agency which collects and compiles the material, lack of systematic inspection and guidance from superiors and the predominance of revenue interest in particular and the administrative interests in general in bringing together the statistical material.

#### *Inadequacy*

Our study by now would have clearly brought out the nature of the varied functions that the *talati* performs. He is the base of the Governmental administration performing most of the official functions. With two or three villages under his jurisdiction their performance exceeds his capacity. Moreover, since the war he has been required to help in the procurement of foodgrains and in the management of food rationing in the rural areas. He has to issue certificates of eligibility to the cultivators to entitle them to receive Government aid of improved seeds, manure, irrigation grants and iron for the implements under the "Grow More Food" drive. The Tenancy and Bombay Agricultural Debtors' Relief Acts have added considerably to his work. The registra-

tion of protected tenants in the village records under the former and issue of duplicates of relevant records to the parties in dispute under both, have increased the burden of his work. Additional assistance was provided to him through the appointment of 'additional talatis' during the war period but this has not materially relieved him of his burden for two reasons. Firstly the new recruits were quite fresh and most of them were untrained. Secondly, the number of assistants provided was not large enough. In the Matar taluka from where first-hand data were obtained for the present inquiry, the number of assistants recruited during the war period was 11 which raised the total strength of the *talatis* to 43. This works out at 2 villages per *talati* on an average. Similarly, a circle inspector had 29 villages under him before the last war, which is certainly too big a number to enable him to effectively discharge his multifarious duties. Since the last war, however, the number of villages under a circle inspector has been reduced to half. But because of the additional duties entrusted to him during the war period such as serving as a main propaganda agency for "Grown More Food" campaign, and aiding the *talati* in procuring foodgrains under monopoly procurement, this change did not bring much relief to him.

#### *Incompetence*

The calibre of an average *talati* is not very high. He is ordinarily educated upto vernacular final. He receives some training under a senior man in the job for about six months to two years during which he is acquainted with and taught the method of writing village records. During the last war the period of training was shortened in some cases and totally dispensed with in others in respect of new recruits. Even after receiving the training, the *talati* would at best acquire an insight only in the routine of his duties but would lack two essential qualities necessary for an accurate recording of data. He would have no aptitude to carry out the work of statistical and factual recording which is more in the nature of an economic enquiry and demands some grasp of the ultimate broader objectives of the statistical collection and compilation. Secondly, he is not free from the inhibition that this work is only subsidiary and as an adjunct to his main duties of revenue collection by which he is likely to be largely judged by his superiors. He is unable to comprehend that the village records that he maintains have a national economic significance. These drawbacks lead to indifference and negligence of this aspect of his duties and manipulation of entries have been noted during this and several other investigations conducted by the Agricultural Economics Section of the Bombay University School of Economics and Sociology and the research students. The blame of manipulations does not entirely lie on the *talati*. The influential parties in the

village play a great role in it. The new atmosphere of corruption and bribery that has developed during the war period is also responsible to a great extent for unauthorised alterations of the village records.

*Inspection*

We have noted earlier that of all the agencies over the *talati* the circle inspector is in continuous touch with him and besides fulfilling certain primary duties devolving on him, particularly since the last war, he carries out comparatively thorough and regular inspection and check-up of the work of the *talati*. Thus a circle inspector possessing necessary abilities and understanding would be able to guide the *talati* on the lines already indicated and put a stop to many undesirable practices about the primary records. But the circle inspector like the *talati* lacks the necessary equipment and aptitude. This is because, in the bulk of cases, he is promoted from the rank of the *talati*, and therefore, inherits most of the handicaps of his previous job. He is, besides, overworked, particularly since the last war, even though the area of his jurisdiction has been considerably reduced from what it was before.

Above the circle inspector we have the *aval karkoon*, the *mamlatdar*, the district deputy collector and the district collector. Inspection and check up of village records are not their regular duties. Besides, they are heavily preoccupied with the official routine, which has as we have already noted, tremendously multiplied as a result of war-time developments. Even then, if the higher officials' visits to the villages are made regular and evenly spread out, some very wholesome influence will be imparted to this work. As it is, their visits lack the features stated above as indicated in the figures below:—

Inspection Visits During 1945-46

| Village             | Aval Karkoon | Mamlatdar | Dt. Dy. Collector |
|---------------------|--------------|-----------|-------------------|
| Bodal .. ..         | .. ..        | 1         | ..                |
| Khadialapara .. ..  | .. 4         | 1         | 1                 |
| Malarpara .. ..     | .. 2         | 1         | ..                |
| Ringlay .. ..       | .. 1         | 1         | ..                |
| Undhela .. ..       | .. 2         | 3         | ..                |
| Jadal .. ..         | .. 2         | 1         | ..                |
| Vasan Buzarg* .. .. | .. ..        | ..        | ..                |
| Virsad .. ..        | .. 1         | ..        | 1                 |

Villages near the taluka towns or those where important revenue matters await disposal are more frequently visited. Khadialapara is an instance in point. It has the highest number of visits to its credit

\* Particulars for this village relate only to the first four months of the year.

because it is situated at the distance of half a mile from the taluka town and there was a long-standing dispute over the use of irrigation water. During the visits, bulk of the time of the revenue officials is taken up by matters like civil suits, lease or auction of Government lands or the speeding up revenue collection, recoveries of taccavi instalments, crop cutting experiments, food procurement, etc., leaving little or no time for checking up the village records or for offering guidance on them to the village officials.

The inspection of village records, as conducted at present, is not quite sound. Although the 'test check' method is employed to test the accuracy of the *Pahani Patrak*, no system is followed to select the entries for the purpose. Instead of following some random sample method, what is usually done is to select for the purpose fields which are near the village-site in respect of which obviously the entries are bound to be carefully made. It is the fields located at a distance in respect of which faulty recording is likely to be detected. The Manual of Revenue Accounts provides for the inspection of village Forms Nos. III, V, IX, XI, and VII, and XII (*Pahani Patrak*) all of which except the last two, are mainly revenue records. No provision for inspection has been made for other agricultural records, such as Live and Dead Stock Register, Tenancy Register, etc.

On the items that are checked up from the *Pahani Patrak*, the main one that comes under broader inspection is that of crops. But details such as areas under different crops, fallows, wastes, etc., are left out. The modes of cultivation do not come under inspection at all. It is also not found out whether the *talati* maintains other village records properly or not with the result that they are often not kept up-to-date, or else, arrears are allowed to accumulate. In some of the villages covered by the investigation, it was found that the *talatis* had not prepared tenancy registers for years together and the circle inspectors had not taken note of this lapse. For want of time, officials above the circle inspector obviously glance through the inspection done by him instead of choosing at least a few fresh entries to ascertain their accuracy.

#### *Diverse Objectives*

The Department of Agriculture prepares crop forecasts and publishes the Season and Crop Report from the data supplied to it by the Revenue Department. Statistics relating to holdings, tenancy, revenue collection, etc., are both collected and published by the Revenue Department. Thus the Agriculture Department does not come in the picture till the final stage of compilation of the statistics. During the primary stages, therefore the work of collecting statistics is put through with a

strong bias towards revenue collection. We have already alluded to this and shown how this bias works in the determination of crop yields and collection of data on prices and wages. This impedes the healthy growth of the necessary statistical organisation and the reliable collection of data.

## IV

## IMPROVEMENT OF STATISTICS

Our study by now must have acquainted the readers fully with the grave defects in the existing agricultural statistics. It must have also been found that the agencies entrusted with the collection and inspection of the statistics do not possess that standard of efficiency necessary to ensure reliable data. And unless reliability and accuracy of statistics are ensured no amount of improvement in them will be of much use. We would begin our discussion with exploring the possibilities of removing the short-comings of the statistical agencies.

*Improvements of the Agency*

The Village Accountant—the *talati*—is the primary agency responsible for the collection of data. We found that he suffers from various short-comings. He is overworked and inadequately trained. Sometimes he is not alive to the importance of the task he has to perform. It is necessary to lighten his burden of work. To that end it may be suggested that the practice of appointing one *talati* per village should be revived. In addition to this, a link should be established between him and the farmers. This will enable him to secure the correct and right data quickly. It will also save much time and labour by eliminating personal enquiries necessary in several cases. The same link will lighten the task of circle inspectors and will be of very great use in preparing estimates of crop yields with as much accuracy as possible. The village panchayat or in its absence a body of representatives of the rural communities would appropriately serve the purpose.

There is much scope for improvement in the training of the *talati* though that alone would not suffice. In the arrangement suggested in the following pages, the *talati's* contact with the efficient and qualified inspecting staff will enable him to acquire a good deal of knowledge of statistical methods during the tenure of his service. Through this, much of the present leeway in the efficiency of the *talati* will be made up. Moreover, powerful checks and strict inspection will dispel indifference or laxity on the part of the *talati*. At present the circle inspectors are largely preoccupied with work of the revenue accounts. The *aval kar-*



loons, the mamlatdars and deputy collectors and collectors who are more competent to undertake statistical inspection find little time for it. The Department of Agriculture which is vitally concerned with the proper maintenance of records has no control over collecting and inspecting agencies.

It is suggested that for the purpose of inspection the village records may be divided into two categories, viz., "mainly revenue" and "mainly agricultural". In the latter category may be included the Village Forms No. VIIa XXII (*Pahani Patrak*), VIIb (Tenancy Register), XIII (Crop Register), XV (Live and Dead Stock Register) and XVI (Irrigation Register). The inspection of essentially agricultural records may be entrusted to a separate agency. For this purpose, a new inspecting agency known as Agricultural Statistics Inspectors parallel to the existing agency of circle inspectors may be created. The personnel constituting this agency should be trained and qualified in Agricultural Economics as well as in the science of statistics. In addition to the inspection of agricultural records, the Agricultural Statistics Inspectors will scrutinise the entries closely and if necessary would go behind them to ensure perfect accuracy. The present duties of the circle inspector will be thus reduced, the only work remaining with him being official routine and checking of revenue records. When this is done the number of circle inspectors under the present cadre can be brought down to their pre-war level so that the appointment of a different cadre of Agricultural Statistics Inspectors will not substantially add to the Government's financial outlay.

The creation of the new agency would effect improvement in statistics in general and statistics of yields in particular as their services will be of great use to put in practice the random sample method for determining crop yields. It will also impart vigour to all post-war schemes, particularly those in which the cultivator is the direct participant. In the long run they would provide a permanent cadre to popularize technical research and improvements in agriculture.

It is of primary importance that the Agricultural Statistics Inspectors work under the direct control of the Department of Agriculture. In this way the Department will be able to ensure that the right type of statistics free from any bias are made available to it. An added advantage of this arrangement is the scope that it offers for a continuous observation by competent statistical organisation and of introducing changes both in the composition and method of collecting statistics as and when they appear desirable. Incidentally, the delays in obtaining statistics which is a regular feature today will be minimized.

Some organizational alteration will become necessary if the Department of Agriculture is to have direct control at the source. It will also help to eliminate the present chaos in the publication of Agricultural Statistics. Thus, the present Statistical Section of the Department of Agriculture should be expanded into a full-fledged Bureau of Agricultural Statistics under the Director of Agriculture. This Bureau will be in charge of the collection of and the control over all the primary data and the Agricultural Statistics Inspectors will serve as liaison between the Bureau and the *talatis* collecting the information at the source. In the case of certain types of information collected by the Inspectors themselves the control will be direct. In addition to the collection of data at the source, the Bureau will collate and publish statistics allied to agriculture obtained from the source as well as from various other Departments like Co-operative, Registration, Public Works, Land Records, Railways (for Statistics relating to internal movements of agricultural commodities), etc. This much about the statistical data available at present. But when the Bureau will start functioning as an independent body mainly concerned with Agricultural Statistics it will collect statistical data on items like prices and wages, cost of cultivation and living, family budgets, marketing costs, etc., on which information is either fragmentary or totally absent.

Some of the above items will require the Bureau to undertake research work. Research work may also be necessary for some of the problems that may arise from time to time in the rural life of the country. An official section for conducting research on a wide scale is a long felt need. The existing departments ostensibly intended to do research are busy collecting, collating and publishing statistics. The proposed Bureau may be able to achieve very little in this direction unless it has a separate independent section to conduct research in problems of agricultural economics.

Thus through research and the collected data the proposed Bureau will help the Government in formulating correct agricultural policies on problems such as stabilization of prices, standardization of wages and rents, marketing costs, etc.

#### *Improvement of Statistics*

While placing the agency collecting statistics on a sound footing, it is also essential to reorganize the method of collection as well so that what is achieved by the former reform may not be offset by absence of necessary improvements in the latter. It is only when this is done that the statistical material will be useful for economic research and for formulating economic policy. Here are some suggestions.

(i) Where the cultivator or the landowner can furnish the required data, the collecting authority should be asked to make a direct approach to the party concerned. No third party, however reliable, should be depended upon in cases like this. All the details in connection with the Pahani Patrak (V. F. No. VIIa and XII), the Mutation Register (the Record of Rights) and the Live and Dead Stock Register (the Cattle and Resource Census) fall in this category and should be collected at the source to which they relate.

(ii) Where actual figures are desired the effort should not end with getting estimates. The crop acreages are an instance on the point. These should not be entered by either 'eye' estimates or mere guesswork.

(iii) In some cases local practices vary so much that it is difficult to lay down any general instructions or standard definitions or categories which would be universally useful in actual collection work. In such cases the immediate head of the collecting agency should be able to offer guidance and issue instructions according to local conditions. The data to be collected in connection with mixed tenancy and mixed sale of land and property, areas to be classed under fallows, culturable wastes and area definitely known as cultivable, etc., come under this category.

(iv) The primary source of statistics relating to agriculture and the allied aspects is the cultivator. He should therefore be educated about the purpose of collecting statistics and encouraged to take utmost interest in the collection of reliable and accurate data. One of the ways to achieve this is to permit him, under certain conditions, to have access to village records, in so far as they relate to entries about his land. Although his reactions may not be allowed to weigh fully they will be useful by way of a check-up.

(v) It is essential to make some of the existing instructions and definitions more elaborate and comprehensive so that confusion and mis-reporting which arise out of varying local practices can be eliminated. For instance in the tenancy register, land cultivated mostly by hired labour is reported under mode 2. But lands cultivated by the farmers of the Surat district who employ the 'halis' (agricultural serfs) for field work and who merely guide and supervise agricultural operations are largely reported under mode 1 which should ordinarily indicate cultivation by the owner or with hired labour.

We would now consider the question of reorganizing some of the village records. The purpose is to avoid errors which ordinarily arise due to defective organization and recording, so that the statistics serve the purpose of reflecting the real conditions.

### *Crop Acreage*

Crop acreages are misreported due to the difficulty of correctly arriving at the areas under different crops grown mixed, crops cultivated over portions of fields only and double-cropping. The right course to avoid wrong estimates is to resort to some such technique employed by the Land Records Department during actual field survey both in respect of mixed crops and partly cultivated fields, irrigated or unirrigated. This will not be a great innovation as the practice was in vogue for some time in the past. In regard to broadcast crops, the seed rate is the only feasible method to determine acreage under crops comprising the mixture.

There is one more innovation which should be introduced in collecting statistics of area under different crops. Hitherto the practice has been to gather this data crop-wise. However, under each crop there are a number of varieties and it would be very useful from the point of view of the marketing of agricultural produce to have some information relating to the acreage under these at least in respect of a few important crops. Similarly, it will also throw considerable light on the production side of agriculture if like the areas under different sources of irrigation, we also have acreage under different systems of manuring or types of manures. Data on the kind and quantity of manures employed per unit of area under crops enable us to judge the comparative merits of different manures in relation to crops and soils and thus serve as a guide to improve production and also to arrive at data on an important item of the cost of cultivation. It will also be useful to collect data of area under improved seeds.

### *Crop Yields*

We have earlier examined the system of estimating crop yields by the well-known method of *annawari* and found that the practice besides being cumbersome and unreliable, leaves considerable scope for imagination while establishing the relationship between the standard crop and the actual harvest. We also suggested that to arrive at the seasonal factor, use should be made of the actual units of weight like the maund and the seer instead of the *annawari* calculations. Similarly, we found that for a proper estimate of crop yields, the crop-cutting experiments should be based on the random sample method. Random sampling has been tried in Bombay and in other provinces since 1943 in connection with the forecasts of the rice crop for determining normal yields. Its use should be universalized to estimate yields of all the crops. At present the outmoded method of crop-cutting experiments is employed in respect of all important crops. And, as we saw, the scope of random sample is further restricted in its application to one crop only. To get

the correct figure of the total food-production in India, it is essential to apply the systematic random sample to all the food, non-food, major, minor, irrigated, unirrigated and garden crops.

### *Tenancy and Rent*

Earlier, we had occasion to indicate the confusion that arose as between the first and the second modes of cultivation while making the entries as a result of want of clear explanations with particular reference to local variations in the practices. It is necessary to clearly define and offer fuller explanations of current practices in different regions relating to all the six modes of cultivation so as to ensure correct returns under each head. An illustration of the nature of errors in statistical compilation that arise out of wrong presumptions would further elaborate this point. Whenever an exchange of land takes place it is regarded at present as for tenancy cultivation. In actual fact, such transfers may be for other purposes such as consolidation. A land transfer, therefore, should be examined from the point of view of its ultimate objective before finding a place in the records. Similarly, rents in our country are paid both in cash and kind with a number of varieties and practices under each. In addition, there are a number of factors which enter the contracts and which are of considerable significance in determining the correct level of rent. All these have been dealt with elsewhere. Unless, therefore, all the details about rents including the other direct and indirect factors that enter into the contract are collected, this aspect of the tenancy register would be incomplete.

The practice today is to transfer data on modes of cultivation, number of tenants, rent, etc., to the tenancy register after they have been recorded in the crop register. However, as they are not passed on to the taluka headquarters in a consolidated form, there is laxity both in their collection and inspection. To remove these drawbacks it is necessary to recognise them on the lines indicated in our discussion and pass them on through the usual channels to the Director of Agriculture for publication.

### *Holdings and Fragmentation*

The size of holding and the number of fragments of which it is made up determine largely the condition of production. At present, data only relating to holdings with regard to land owned are collected quinquennially. They are published in the Land Revenue Administration Report. No data, however, are available about the cultivated holdings. Only recently, the Bureau of Economics and Statistics, Government of Bombay, have published the results of a Sample Survey of cul-

tivated holdings and fragments which they carried out in the Province. However, no arrangements exist to collect these data regularly in future. It is needless to emphasize here the importance of information relating to the cultivated holding as distinct from the owned holding. It is a common practice among medium and small-sized cultivators to expand the size of their holdings by taking a few more plots on tenancy when their economic conditions permit. And thus it is that the cultivated holding and the number of fragments of which it is composed reflect more truly the economic condition of the peasantry and the changes in them than the owned holding and its size. From the point of view of technological changes also, these data are of considerable significance.

#### *Land Transfers.*

The Mutation Register maintained in the village is the source to draw upon to assess transactions in agricultural lands. The sub-registrar at the taluka prepares a consolidated statement of transfers of land and other property relating to the sub-division. The published data on land transfers are based on these taluka summaries. The change that should be introduced in practice is that the data about land transfers should be published on the basis of the village register instead of the consolidated taluka summaries which omit certain useful information. But before the Mutation Register becomes the important base of published data, its form requires to be changed for the better. Instead of the descriptive nature of the account of land transfers that is usually entered in the register, details about every transaction should be collected in a tabular form under the heads of area and class of land, land revenue, caste, residence, and occupation of the parties to the transaction, the purpose of the transfer, etc. The purpose of the transfer and similar useful data which appear in the document executed by the parties and which would throw useful light on the question of land transfers do not find a place in the records today. The other defect about the Mutation Register is that land transactions which involve sale, mortgage and redemption, and those which arise out of inheritance and gift are entered without distinction. This causes difficulty in sorting them out according to their nature and reporting them under relevant heads. The register would become more systematic and useful if in addition to making it comprehensive, it is split up into three parts, each containing one of the three classes of entries indicated above.

We have much to say against the details collected under the cattle census. The heads under which information relating to cattle is collected are quite comprehensive. There are, however, two flaws which need correction. No distinction is drawn at present between the cattle

maintained for mainly agricultural and mainly dairy and breeding purposes. There are a large number of shepherds and cow-herds who maintain cattle for breeding. A considerable number of cattle are also maintained by urban people for purposes like dairying or transport. Even in the villages themselves, quite a number of people who have little or no lands to cultivate maintain bullocks for plying carts on hire. The agriculturists maintain cattle not so much as an economic proposition but as a subsidiary activity to the main occupation of cultivation. Problems of fodder in particular and feeding and grazing in general do not immediately affect them, as they have ordinarily sufficient provisions for them. For others, cattle upkeep is mainly an economic proposition, and unless there is adequate returns there will not be enough temptation to maintain them. It is, therefore, essential to conduct the cattle census with the important broad groups of not only urban and rural but also into agricultural and essentially dairying and breeding groups.

Next to cattle, agricultural implements are the most important item of assets of the cultivator. Their nature would suggest the efficiency in farming. Their depreciation and replacement constitute an important item of his cost of cultivation. Today the census is confined to the plough and one or two other items in the category under the broad division of wooden or indigenous and iron. Nothing is indicated about the length of service or the new purchase in different years with result that no idea can be had about this aspect of the agricultural resources of the country. If the census of implements is to serve its right purpose it is essential to broad-base it on the lines of our discussion and to correlate the statistics of cattle and implements with the statistics of owners. When data about cultivators, their holdings, livestock and implements are read jointly a correct idea about our rural economy would be forthcoming.

### *Wages*

It is not necessary to re-emphasize that the method and form of reporting agricultural wages at present in use is unsystematic and unrepresentative. The classification of field labourers from the broad group of skilled, unskilled and field workers into men, women and children does not hold good in respect of agriculture as payments here vary according to the nature of agricultural operations performed. It is the nature of work in addition to the sub-classes already employed that should form one of the heads for reporting the level of wages in agriculture. In addition to this, the piece and job wages are also prevalent in most parts and constitute an important proportion of the farmer's disbursements on labour, particularly for harvesting grass and

some of the crops in North Gujarat. In order that data on wages become fuller, it is but natural that the type should find a place under a few broad heads in the statistical collection and compilation. If necessary, a separate schedule may be employed for the latter purpose. As regards their collection at the actual source, we have suggested that, like prices, they should at least relate to a few villages in each area of a taluka and should be obtained through enquiries on the spot. It needs hardly to be stressed that the frequency with which they are obtained and the agencies of their collection should, as far as possible, be uniform. It is common knowledge that wage, beside being paid both in cash and kind, also consists in part, of perquisites, emoluments and concessions, which in themselves vary considerably not only from place to place but with regard to each individual case. In view of their varying nature it is desirable to keep them distinct and present them under certain broad heads instead of combining them with the principal wage so that some idea can be had of the terms and conditions of employment.

Contract labour is gaining in importance since the beginning of the last war. It is, therefore, necessary that along with statistics of wages of casual labour, information on all aspects of contract labour should also be collected with special emphasis on wages paid to the contract labourers. These data should be made available at least twice a year.

### *Prices*

We have dealt with the faulty procedure adopted in collecting data relating to agricultural prices and have pointed out the way to improve it. Statistics of prices, besides, will have to be comprehensive so as to cover items like tea, sugar, fuel and lighting, building materials, ploughs, shoes, carts, the seed drill, sickles, manures, etc. When this is done, the purpose of collecting data on agricultural prices will be served much better. The limited data give an idea of level of gross income of the cultivator. In their reoriented form they will give enough material to obtain an idea about the levels of the costs of cultivation and living so that all the three together will enable a realistic picture of rural conditions being drawn. To prepare the rural indices such as cost of living, cultivation, prices, etc., periodically, it is desirable that all these data and those of wholesale and retail prices should be asked for more frequently. As we have indicated earlier, the source of the price statistics should be as far as possible the same every time so that a sort of uniformity may be achieved both with regard to the information supplied and conclusions drawn from them. Wholesale prices should be collected from an association of dealers in agricultural produce or in its absence through four or five separate dealers. Retail prices, as they relate to rural condi-



tions, should be collected from four or five villages of the taluka instead of collecting them from the taluka town as is done at present.

#### *Agricultural Census*

Reference has already been made in places about the omission of certain data which are economically of vital importance. Some of these are actually collected in the primary records but are not compiled and published. With regard to others no arrangement exists for collection at the source. We have dealt with these categories in details. A third set of statistics lack uniformity either over a number of years or are not sufficiently detailed. Data relating to rural class structure are an example of the last category. The population census gives the occupational classification of the rural population. But this classification being vague and not quite comprehensive, prevents proper study of the rural population grouped into various economic classes. Furthermore, the form of presenting the occupational distribution of population varies from census to census, so that no comparative study of the statistics is possible. The 1941 census omits even this limited and unsystematic information.

Agricultural census which we contemplate will have to cover much wider field. Besides class structure of rural population and its relationship with land, such a census should cover the assets and liabilities of the cultivators, family-budgets and the data on the cost of cultivation. Details of some of the assets like livestock and implements are already collected and with improvements suggested they would fit in the scheme. Similarly part of the liabilities such as debts due to the co-operatives and to the Government in the form of taccavi loans and mortgage debts are at hand. Only a small effort will be required to systematize their publication. With the coming into force of the Money-lenders' Act, the other types of debts of the cultivators will also be known. It would also be comparatively easy to arrive at the cultivator's gross income on the basis of agricultural yields, prices and the area farmed, after they all have been placed on the proper footing on the lines suggested earlier. Information on the remaining assets, liabilities, etc., however, will have to be collected under the census. Admittedly, it will be difficult to elicit information on some points. For example, it will need great skill and intelligence to assess the private hoards of the cultivators, proportion of produce disposed off on the farm, weightage to be attached to the various items of the farmer's costs of cultivation and living, determination of the cultivator's financial requirements, etc. However, given the right type of agency and a background in the form of enlightened rural population to be approached the task can be achieved with a fair measure of success to begin with.

It is needless to emphasize that an agricultural census should bring together in one publication all statistics relating to agriculture and allied subjects and thus succeed in putting an end to the chaos arising out of number of publications brought out by many departments connected with agriculture in one way or other, each giving publicity to a set of figures specially compiled from its own view point or for a specific purpose. Statistics of cultivated area, crop acreages, yields, etc., will remain an annual feature, as at present, while information on other aspects may be published quinquennially. Incidentally this reform will end the difficulty of reading the statistics comparatively because of variations in the forms of various departmental publications. Earlier we have referred to the need of expanding the scope and work of the Statistics Section of the Department of Agriculture into a full fledged Agricultural Statistics Bureau, which should be the proper body to receive all returns relating to agriculture, land and allied matters from the taluka officials and corresponding authorities of the Public Works, Forest, Registration, Co-operative and Land Records Departments. Being in charge of proper presentation and timely publication of unbiased agricultural statistics, it will be in a position to insist on getting the returns in time and in this way eliminate the delay about all the annual reports and periodical crop forecasts which is a feature today. With the creation of the Bureau and the appointments of the Agricultural Statistics Inspectors who will be under its direct control both for inspection of data collected and for helping the Bureau with details on certain aspects, most of the irregularities at the source will disappear.

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## OUR FORESTS AND FOREST POLICY

*by*

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### INTRODUCTION

Forests are aptly described as the 'hand-maids' or rather the 'foster-mothers' of agriculture and, in fact, the economic patterns of some of the great regions of the world are characterised by forest economy as against agricultural, industrial, pastoral or mixed economies. Forests influence the climatic conditions, regulate the flow of rivers and streams, protect soil from erosion due to winds, floods, etc., and stabilise condi-