

being enlightened on the benefits of using the *H. M. Guntakka* (a modified blade harrow) for harvest, to reduce the cost of cultivation. *Red Gram*:—This is the next important crop and it is usually mixed with *Cumbu* or *Varagu*, and no change in its cultivation is necessary. If the season happens to be late for this crop, other pulses like black and horse gram are recommended.

There are at present 34,000 acres of cultivable waste lands in this State, of which a major portion is suitable for raising plantations like *Senna*, silkcotton, cashew-nut, casuarina etc. As these crops require attention only in their initial stages, and as they are afterwards adapted to dry conditions, efforts are being made to popularise their cultivation here. When the farmer becomes sufficiently conversant with the soil and the seasonal changes in the locality, he may attempt to raise a better crop and try the change. If he finds the change beneficial he can gradually extend the area under a new crop and even tap fresh markets. To be brief, conservation of rain water, prevention of the loss of soil moisture and fertility, go hand in hand in the development of dry farming.

Conditions requisite for their initiation. Though a greater portion of dry fields in this State is not level, but undulating, our ryots carry on cultivation without effecting improvements. While the plants in the elevated portions may suffer for want of moisture those in the lower levels are water-logged and the entire crop consequently results in a poor return. Such defects can be rectified during the slack seasons and fields rendered as level as possible consistent with the drainage. The steep and sloping lands may be divided into small plots under terrace system and the plots suitably bunded and provided with turf vents to prevent erosion. In this State the number of actual cultivators is small in many villages, and of these many have emigrated to obtain a living elsewhere. Those who still cling to their homes, are heavily indebted. Many owners of lands do not live in villages and do not care to consolidate these holdings to the desired extent or adopt improvements. If some enterprising capitalists would reside in villages and demonstrate dry land farming on scientific lines our peasants will follow them. Where extensive areas are available, cultivators and colonists from outside may be attracted to such lands by offering inducements.

THE POULTRY INDUSTRY OF INDIA

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Part I.

India is supposed to be the original home of poultry and it is presumed that the genus *Gallus* originally migrated from India to other parts of the world; although it is difficult at the present time to trace

this migration in all its stages, through the passing of time. In Indian literature, ancient, medieval and modern, references also abound, mentioning the superior qualities of poultry-flesh and its aphrodisiac, health-promoting and disease-eradicating properties. Proverbs and pithy sayings about what human beings might learn from the life of poultry, as among other animals and birds, are to be found in the writings of Chanakya a great Hindu politician and naturalist who lived about 400 B. C.

While these references unmistakably point out to the flourishing condition of the poultry industry in the ancient days, we have it on record historically, how, during the Mohamadan period, the industry got a fillip on account of the great interest taken by the court, where cock fighting happened to be one of the chief amusements. The interest evinced by the rulers of the land is reflected even in the writings of the Urdu authors of the times, wherefrom it is clear that there was a popular belief, that the cock and its flesh were even supposed to possess mysterious powers. How far this superstitious belief was rooted in the popular mind could be gauged from the fact, that an idea was prevalent, that once in its life time, the cock laid a very small egg called in Arabic "Bayzat-i-vgr".

But the industry could not reach a high standard of development on account of religious considerations in the case of Hindus and the decline in power in the case of Mohamadans.

Present condition of the industry. At present the industry is in the hands of ignorant men. There is no system of breeding, feeding, housing etc. Fowls inbreed as they please and are bred just to supply eggs and table birds without any attention to size. These birds have to look for food themselves. If the master is kind a handful of grain is all they can expect from him but in the majority of cases that too is missing. Under these conditions their vitality has deteriorated and the birds have become susceptible to many diseases. Often, whole flocks are wiped out on account of plague, cholera, ticks, fever, etc. Still, taking into consideration the circumstances under which it has to live, the indigenous fowl is a hardy bird and is capable of enduring very adverse circumstances, but, on account of the treatment meted out to it, the size and the laying have deteriorated considerably.

Species of Fowls found in India. The red jungle fowl is found in abundance in the jungles of Northern India, with different kinds of pheasants, while the grey jungle fowl, *Gallus Sonnaratti*, is found in the Southern India jungles. Domestic fowls that are prevalent in India at present can be put under the following heads:—

(1) Those that resemble the jungle fowl; they seldom exceed 3 to 3½ lb. in weight and are very poor egg producers both in size and number. (2) *Aseels*, the pure-bred game-fowl; this breed is getting

very rare and is found in the hands of a few breeders. (a) *Ghages*—resembling *Aseels* are slow maturing good table birds, but very poor layers. (b) *Chittagongs*—so called after the name of that district of Bengal. This is a valuable breed both as regards laying as well as table qualities. (c) *Karaknath*—The eyes, skin and blood of this breed are all black. This breed is getting extinct. (3) Modern Breeds:—(a) In this class will be the modern breeds of Europe and America such as *Rhode Island Reds*, *Leghorns*, *Minorcas* etc. (b) The crosses between (a) above and the country fowls. They are bigger in size and are better layers. (c) In addition to the classes enumerated above there are a number of geese, ducks, turkeys, guinea fowls and various kinds of pheasants.

Among the modern breeds, White Leghorns, Black Minorcas, Rhode Island Reds, Orpingtons are very popular and seem to stand the climate well.

Organisation. Unfortunately the Central Government has till now done nothing to promote the industry of poultry farming but of late some of the Provincial Governments have been taking some interest in the industry.

The chief agencies for the promotion of this industry in India at present are as under;— 1. *The U. P. Poultry Association, Lucknow.* This is the most important and the pioneer organisation in the whole of India. 2. *Poultry Sections of the Agricultural Department of the Punjab, Bengal, Bombay and Madras.* These sections have been started very recently on a small scale. 3. *Indian Poultry Clubs.* (i) South Indian Poultry Club. (ii) Bombay Presidency Poultry Club. (iii) Burma Poultry Club. 4. *Christian Missions.* American Mission in Etah. U. P., Katpadi and Ramanathapuram in Madras Presidency and Hubli in Bombay Presidency. 5. There is a small poultry section connected with Dr. Rabindranath Tagore's (the world famous poet) rural reconstruction work in Bengal. Among the Indian States, Kashmir, Baroda, Hyderabad and some smaller states have started small poultry sections which are connected with their Agricultural Departments.

As no records have ever been kept of the number of head of poultry in India, it is impossible to give any accurate data on the point, but it is roughly calculated that out of 350 millions of people about $\frac{1}{6}$ th of the population participate in this cottage industry, each family keeping about 6 to 7 birds.

Methods of Marketing. The marketing of eggs and fowls is in the hands of the professional dealers, who make house to house collection and transport the produce to market towns. The eggs are sold by number and not by weight. Generally eggs are packed in a sort of earthen jar and an egg-shell is tied on the top of it, which denotes the delicacy of the contents and warns the people to handle them carefully.

The Railways charge half the usual parcel-rates for egg-parcels, but their charges for empties and live poultry are very high and these do not encourage the industry. The average weight of an egg is about $1\frac{1}{2}$ oz. and that of a table-bird generally about 3 to 4 lb. The average production of the country hen is about 40 to 60 eggs. The price for poultry production in the different parts of the country varies from 6 to 12 annas which is equivalent to 6 to 12 pence. There is no standard for eggs or poultry. Larger eggs command slightly higher price. Table birds are sold by piece prices ranging from 8 to 10 d. according to demands and size. The industry is carried on between the peasant-producer on the one hand and the consumer on the other through the agency of the middle man who makes the most of the deal. There is no trade in bye-products of poultry. They are all wasted.

Obstacles for the Industry. There are several difficulties that come in the way of the development of this useful industry, some of which are noted below:— 1. Most of the people of the country are vegetarians and have got religious scruples, which are up against poultry-farming. 2. The ignorance and poverty of the peasants and their lack of knowledge as to how to handle these living beings are formidable obstacles. 3. The susceptibility of poultry to diseases and different climatic conditions. There are no scientific research institutions where any thought is given to problems relating to poultry. 4. Lack of proper breeding stock in the country. Except the United Provinces Poultry Association, Demonstration Farm at Lucknow, I do not know of any other farm through out the length and breadth of India and Burma, where any pedigree breeding is conducted. 5. There is no organised system of marketing the produce. There is no State Law to govern this factor, there is no check to bringing sick fowls to the markets and there is no restriction to selling stale eggs in the open market. Even the purchasers do not take proper measures to ensure that they are getting proper quality commodity for the money spent.

Part II

POULTRY BREEDING IN THE UNITED PROVINCES

For the past 22 years some small efforts have been made to effect some improvement in Indian poultry. In 1910 an unofficial body styling themselves as the Indian Poultry Club was formed. The body has been instrumental in interesting the public in modern pure-bred fowls by holding exhibitions in different parts of the country. They also publish a monthly journal "The Indian Poultry Gazette."

As an outcome of this club Sir Hercourt Butler, the late Governor of these Provinces, in 1919 asked his Government to finance a small scheme, which would have as its objects (1) the improvement of poultry in the United Provinces. (2) to popularise the breeding of

fowls and (3) to educate the public on the importance of the industry.

Mrs. Fawkes was appointed as Poultry Expert to the United Provinces Government—with her headquarters at Lucknow, which is one of the big cities of India and a very central place in the Province, with a small staff consisting of (1) a Farm Manager, (2) an Assistant Secretary and Demonstrator, and (3) one Office clerk with a small menial staff.

Keeping these points in view, two farms were established, in 1920—21 one in the Horticultural Gardens, Lucknow and the other at the Government Bovine Depot at Patwa Dangar, near Naini Tal. The purpose of these farms was:— (1) to demonstrate how poultry farming should be conducted. (2) to breed such breeds of fowls as would be suitable to the conditions of the country. (3) to provide stock birds and eggs of the improved breeds throughout the whole Province. (4) to study the suitability of poultry foods grown in the country. (5) to study poultry diseases as far as possible, and (6) to evolve a suitable breed of fowl that will combine greater production and immunity from poultry diseases etc.

As regards the popularisation of good breeds of fowls and the educational work, the following methods were adopted:—(1) Instructive and interesting articles were contributed to the important newspapers on the importance of the industry. (2) Lectures were delivered, illustrated by magic lantern slides and later on also by screening a Cinema film, on poultry industry in India, (3) Poultry shows and Demonstrations were organised at all the important Agricultural fairs and other exhibitions that take place every year in these Provinces as well as separately, in which the successful exhibitors were given prizes in cash or stock birds as an encouragement. (4) Pamphlets and bulletins were issued on poultry keeping free of cost. (5) Training of students in poultrying on up-to-date and scientific lines was conducted as far as possible. (6) Local Associations and poultry societies in connection with the Co-operative Department were organised. (7) Practical demonstrations were given by running a Railway Poultry Car, or Miniature Farm on wheels, which is fully equipped with up-to-date appliances etc. and which runs all over the province whenever possible. (8) Recently, a monthly Poultry Journal in Urdu is started in which instructive articles are published on different points of poultry farming such as diseases, housing, feeding etc. (9) People interested in poultry are enlisted as members all over the Province. (10) Mutual business transactions are arranged between the different farmers. In addition to this thousands of advisory letters have been issued and are being issued every day.

The main object of the Association was to improve the conditions of poor professional poultry keepers and to carry out this policy some

small farms were started under the Courts of Wards, District Boards, Criminal Tribes Settlements, and in Etah District through Mr. Slater, an American Missionary, who also has been engaged in teaching the poor villagers the benefit of this industry; and, quite a lot of stock birds and eggs were distributed to the deserving people. Under the supervision of Mr. Slater a large number of cockerels was given to be distributed among villagers. The results were really very encouraging where there was technical and reliable supervision, and in other places though the success was not as much as expected still it did help in improving the country breeds by coming in contact with the improved varieties.

Now year by year the farm grew in popularity and the interest aroused in poultry farming spread all over India, and there was a big demand for our stock.

Success Achieved. Before this Association started, there were practically few people who knew the importance of this industry. To-day we find nearly all the Provincial Governments and most of the Indian States have started Poultry breeding operations, and others are contemplating to do so soon under the Development Departments on a permanent basis. All these schemes are being manned by our students on our lines.

The Kashmir Government started four farms last year and all these farms are being managed by our students and every thing is being done on our suggestions.

The Government of the Punjab which started the work under our directions some five years ago, have started four more breeding centres each under a Deputy Director of Agriculture from the very beginning.

We have trained two men of high education for the Government of Baroda State who are now engaged in poultry work of the State.

Since January 1931 the Government of His Exalted Highness the Nizam have started this work on a grand scale and the work is being carried out earnestly and on our lines and directions.

Experimental work. (1) Pure bred stock imported has been kept successfully through the tropical conditions of the plains, and the progeny deteriorated in no way. (2) The production of pedigree stock has been determined and it is proved that they yield 3 times more than country fowls. (3) The crossing of pure-bred poultry with indigenous ones in villages has resulted in producing a progeny much bigger in size with better laying capacity both in quantity and quality than the country fowl, as described elsewhere. In one year a brown Leghorn-desi cross pullet was put in the Egg-laying Test conducted by us, and laid 61 eggs in 64 days. (4) Controlling of poultry diseases by sanitary measures. For example in 1928-29, the best year of the farm, the disease known as "Ranikhet Disease" broke all over India and the cities and towns were simply cleared of

poultry and quite a lot of farms were ruined. Crows were dying in thousands. Every day there used to be dozens of crows which were the carriers of this disease dying on the farm. The disease broke out on the farm, which within its limited space and with its proximity to the municipal rubbish dumping grounds stocked a flock of 1300 birds. But prompt measures were taken and only 10 birds died which were at once destroyed. The saliva of these destroyed birds was sent to Muktesar for examination and there it was tested and proved to contain the infective principle of the same disease. (5) Suitability of food stuff for poultry that grow in this country were tested and people were advised accordingly. (6) A suitable breed of fowls was evolved. The breed combines increased egg production both in number and size, and greater immunity from diseases. The peculiarity of this breed is that while in other breeds the birds lay a fewer eggs and the vitality is reduced and they become useless soon, this has a very good longevity; some of them are 5 years old and still they lay quite well and the size of eggs is remarkably good. Both in 1929-30 and 1930-31 the eggs from this breed won first prizes in large white egg class of the All India Poultry Exhibition.

The brief report on one of the shows held in these Provinces in January, 1932, will throw a good light on the success of poultry work in the Provinces.

The Etah Poultry show. "The fifteenth annual Etah poultry show has just been concluded, and marks the high point in poultry-raising in the Etah District. There are two outstanding features about the show; (1) that it is a villagers' show; and (2) that pure-bred fowls of the White Leghorn and Black Minorca breeds make up 95 per cent. of the show.

A total of 2,341 exhibits by 329 exhibitors from 174 villages was represented. These village men spread out over 8 districts.

At no classic show in either England or America are such large classes in Minorcas and White Leghorns to be found as have characterised the Etah Show.

An outstanding feature of the Etah Show was the visit of His Excellency the Governor, Sir Malcolm Hailey. In a brief speech, before the distribution of prizes, His Excellency voiced his appreciation of the show, and the splendid efforts being made through poultry-raising to improve the economic status of the villager, and particularly the low-caste people.

Mr. Pandey of the U. P. Poultry Association, in making the Judge's remarks, drew attention to the need for developing the poultry industry in each and every district of the Provinces, and finding suitable markets for surplus poultry products."