

and the deliberations of the Round Table Conference that is now in session will bring peace and plenty to the world and to India.

We are happy to be able to say that our *Journal* has successfully completed the eighteenth year of its life and entered into its nineteenth year. For the *Madras Agricultural Journal*, the year that has just ended was one of steady all-round improvement and we look forward to greater prosperity and usefulness.

We do not believe in New Year resolutions. We do not, therefore, promise this and that for the coming year. We will only remind our readers that each one of us can do something and that if we fail to do it we are impoverished to that extent.

Our New Year greeting to our readers is this :

‘ This is *your Journal*, make it as useful as you can. On our side we are always at your service and await your commands.’

<https://doi.org/10.29321/MAJ.10.A04985>

REVIEW OF SOME BREEDING EXPERIMENTS CARRIED OUT AT THE U.P. POULTRY ASSOCIATION'S DEMONSTRATION FARM, LUCKNOW:

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The primary need for an egg producing breed of fowl that will be more immune to the Indian climate and conditions than imported poultry are, has led the association to conduct experiments to endeavour to discover such a breed.

After following up some experiments in crossing Chittagong hens with Rhode Island Red males the experiment was relinquished owing to two drawbacks: (1) the prevalence of broodiness in the progeny, and (2) the pugilistic tendencies of the progeny, who from chickenhood fought so constantly that the area of land required for rearing them satisfactorily was not available. Otherwise the progeny were fine birds and fair layers.

A further experiment has been made between crossing local hens, with high producing Leghorn males. These experiments are still going on, but they do not seem to indicate any remarkable improvement in the egg yield of the progeny. Individual high records have been obtained but flock averages do not tend to indicate that Indian village hens mated to pure bred males will produce a definite increase in egg yield, the dominant zero breeding factor of the Indian hen, nullifying the attainment of better flock production in the progeny. In all other respects the improvement is marked.

We realized that to obtain satisfactory results we must look for an indigenous breed of which the females were already good layers. We

happened to come in touch with a breed of hens in Western India commonly known as Bussorah or Busra fowls. These birds are fairly common around Bombay and are imported evidently from the Persian Gulf.

In 1926, we purchased 4 hens of this breed from Bombay and trapnested them and a record for 4 years of their winter laying is appended.

One hen met with an accident and had to be destroyed in 1928, the other 3 hens (now 5 and 6 years old) are still with us and are laying 30 eggs or so during the winter months.

The Busra hen is a typically built bird for egg production. A deep bodied bird, tight in feather, alert, and though smaller than a Leghorn in appearance, weighs 4½ lbs., as a pullet. The breed is distinguishable by its semi-buttercup comb, grey legs and tuft of feathers on head.

The colour varies, and requires stabilising, but the main characteristics of the type are apparent in all colours. The egg is a large white egg, in many cases reaching the 2 oz. standard. Broodiness is not so troublesome as in country hens, the broody period is easily broken and within a few days the hen returns to lay. This breed therefore seemed to us worth cultivation. We therefore trapnested the original Busra hens and the record is given in the appended tables.

The following year we experimented in crossing these pure Busra hens with a White Leghorn male. The eggs hatched well under artificial methods, and the chicken were reared most easily, showing rapid growth, little or no mortality and immunity to the hot season conditions. We therefore selected a group of pullets and trapnested them during the winter season (the period recognized by poultry breeders as determining the future laying powers of pullets) and we give, in the appended charts, the results of our first cross experiments carried out in 3 successive winters. The results were most satisfactory, especially as regards broodiness. This factor was practically eliminated by the introduction of the non-broody White Leghorn strain. Egg production and size of egg were remarkable.

In 1928-9, we further experimented with crossing our half Busra X Leghorn pullets back to a pure White Leghorn male. We append the egg records which though still good, were not quite so high as in the first cross, but part of the results was lost by distributing the stock to a village, where no records could be kept. The appearance of this cross closely resembled the White Leghorn parent.

The experiment was again repeated in 1929-30 and a third cross was made between the ¾ Busra X Leghorn pullets and a pure White Leghorn male of which the record is given. At the same time we continued to keep the Busra strain pure. In order to do this we imported a Busra or Bussorah cock from the Persian Gulf and mated him to our original hens. We have carefully recorded results, and the progeny are fine birds, but show an increase of broodiness in the progeny due doubtless to the influence of the pure Busra male of whose parentage we had no record. Seven of the pullets of this mating were sent in 1929 to the National Laying Test, Milford, England, where they are now in competition with some 3 to 4 thousand pure pedigreed birds from all countries. The results of their laying for 48 weeks are given at the end of this article. Breeders in the West have been immensely interested in their performance and in their wonderful vitality and stamina. In spite of snow and rain, not one bird has been sick or sorry. Their curious propensity to go

broody at intervals for a few days only and then return to lay has been the factor that has marred their otherwise fine performance. This propensity is only a matter of experiment to breed out. The interesting fact is, that this untried unpedigreed breed from India has put up in Europe, a very fine record, especially hens numbered 457 and 461. The former, by one egg only, failed to get the copper ring award, the hall mark of a recognized high producer.

In the field, that is to say in our distribution of eggs and birds to U. P. villages, the Busra X Leghorn cross has given satisfaction, and we are getting a great demand for all the stock that we can produce.

We hope to continue to breed these birds and would recommend all poultry breeding centres to indent on us for eggs and so procure a large supply of these fowls making them available to the smaller poultry breeders throughout India. Concerted action ought to be taken to raise large supplies of such a useful variety.

Note.—We have been placing pure Basra and first crosses between Busra hens and white Leghorn cocks into our villages with excellent results. We have not yet distributed other crosses as they are still in the experimental stage of testing. Eggs of second crosses will go out to villages this year for hatching purposes.

TABLE I.

Record of 7 Busra hens sent to the National Egg Laying Test, England

(The Test record is for 336 days of 12 lunar months, i. e. 48 weeks.)

| Serial No. | Regd. No. of hen | Total eggs laid | 1st grade | 2nd grade |
|------------|------------------|-----------------|-----------|-----------|
| 1 | 456 | 143 | 77 | 66 |
| 2 | 457 | 173 | 124 | 49 |
| 3 | 458 | 157 | 34 | 123 |
| 4 | 459 | 78 | 1 | 77 |
| 5 | 460 | 141 | 104 | 37 |
| 6 | 461 | 179 | 170 | 9 |
| 7 | 462 | 169 | 97 | 72 |

The average egg production per hen is 148.4.

TABLE II.

Four years winter record of Pure Busra he.

| Year | Number of hens in pen | Eggs laid per month | | | | Total | Average per bird | Remarks |
|---------|-----------------------|---------------------|------|------|------|-------|------------------|--|
| | | Nov. | Dec. | Jan. | Feb. | | | |
| 1926-7 | 4 | — | 60 | 89 | 80 | 229 | 57.1 | |
| 1927-8 | 4 | 27 | 61 | 59 | 76 | 223 | 55.3 | One hen was accidentally killed during 1928. |
| 1928-9 | 3 | 52 | 33 | 54 | 24 | 163 | 54.1 | |
| 1929-30 | 3 | 9 | 24 | 16 | 44 | 98 | 32.2 | The hens are now 5 years old and still laying. |

TABLE III.

Three years winter record of FIRST CROSS
($\frac{1}{2}$ bred Leghorn. Busra \times White Leghorn cock)

| Year | Number of hens in pen | Eggs laid per month | | | | Total | Average per bird | Remarks |
|---------|-----------------------|---------------------|------|------|------|-------|------------------|-----------|
| | | Nov. | Dec. | Jan. | Feb. | | | |
| 1927-8 | 7 | 85 | 151 | 156 | 137 | 529 | 75.4 | |
| 1928-9 | 9 | 151 | 136 | 146 | 141 | 574 | 63.7 | |
| 1929-30 | 8 | 60 | 126 | 130 | 120 | 436 | 54.4 | One death |

TABLE IV.

Two years winter record of SECOND CROSS
($\frac{3}{4}$ bred Leghorn Busra. Busra \times White Leghorn male mated to a white Leghorn male)

| Year | Number of hens in pen | Eggs laid per month | | | | Total | Average per bird | Remarks |
|---------|-----------------------|---------------------|------|------|------|-------|------------------|---|
| | | Nov. | Dec. | Jan. | Feb. | | | |
| 1928-9 | 14 | 227 | 252 | ... | ... | 479 | 68.6 | The hens were sent to a village and their records lost to the farm. (The average is calculated on a 2 months' basis.) |
| 1929-30 | 5 | 65 | 78 | 75 | 65 | 283 | 56.3 | |

TABLE V.

Four months winter record of THIRD CROSS
($\frac{2}{3}$ bred Leghorn Busra. Female progeny from mating Busra \times White Leghorn \times White Leghorn to a White Leghorn male)

| Year | Number of hens in pen | Eggs laid per month | | | | Total | Average per bird | Remarks |
|---------|-----------------------|---------------------|------|------|------|-------|------------------|---------|
| | | Nov. | Dec. | Jan. | Feb. | | | |
| 1929-30 | 8 | 89 | 152 | 160 | 151 | 552 | 69 | |

TABLE-VI.

One year laying record of FIRST CROSS at the U.P.P.A. egg laying test
(From 1st November 1927 to 30th September 1928 i.e. 12 lunar months)

| Register number of hen. | Number of eggs laid per month | | | | | | | | | | | Total | Grade of egg | | Remarks |
|-------------------------|-------------------------------|------|------|------|------|-------|-----|------|------|------|-------|-------|--------------|-----|---------|
| | Nov. | Dec. | Jan. | Feb. | Mar. | April | May | June | July | Aug. | Sept. | | I | II | |
| Hen. 44 | 6 | 17 | 24 | 22 | 21 | 14 | 6 | 12 | 8 | 11 | 9 | 150 | 45 | 105 | |
| " 45 | 9 | 24 | 25 | 22 | 25 | 12 | 3 | 13 | 17 | 3 | 9 | 162 | 47 | 115 | |
| " 46 | 17 | 25 | 23 | 20 | 18 | 17 | 6 | 6 | 13 | 13 | 5 | 163 | 39 | 124 | |
| " 47 | 14 | 25 | 23 | 21 | 22 | 16 | 10 | 12 | 18 | 8 | 14 | 183 | 64 | 119 | |
| " 48 | 19 | 23 | 23 | 20 | 21 | 19 | 5 | 13 | 17 | 13 | 7 | 180 | 55 | 125 | |
| " 49 | 6 | 17 | 17 | 15 | 17 | 9 | 6 | 5 | 16 | 6 | 5 | 119 | 35 | 64 | |
| " 50 | 14 | 20 | 21 | 18 | 22 | 11 | 9 | 9 | 10 | 5 | Nil | 139 | 28 | 111 | |

THE PLACE OF PADDY IN THE WELFARE OF THE COUNTRY¹

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I understand that you are interested not only in the dry parts of economics but also in the effect on the community at large, of maladjustments in the economic position. I have therefore chosen as the subject of my discourse what I consider to be a grave maladjustment in the agricultural economy of this Presidency. I refer to the large area under paddy, more particularly swamp paddy.

The total area actually under crop, in the Presidency, is approximately thirty-nine million acres. The total area under paddy is approximately, eleven million acres, of which area approximately eight millions are swamp paddy. This does not mean that every third or fourth crop is a paddy crop and that other crops are given in rotation with it. If that were so, much of what I have to say would not need to be said. As you are aware, there are wide stretches of country where paddy follows paddy monotonously every year and these stretches are getting wider and the area under swamp paddy is being added to yearly. This is the position. I propose to examine

¹Lecture delivered at the Senate House, on Wednesday, October 5, under the auspices of the Madras Economic Association. Published by Courtesy of the Editor, *Madras University Journal*.