

will be taken advantage of by the chickens to adjust their plumage after their meals, and when protection from the sun or storm is required.

**DUST-BATH.**—Under the shed the dust-bath should be made, that it may be kept dry and be of service in all seasons.

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**SUPERFLUOUS MALES.**  
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**T**HERE is one suggestion that needs to be made before leaving this interesting subject. Granting that nutrition is the solution of the problem of controlling the sex, and that by proper feeding the nutriment in the eggs can be increased or decreased, there yet remains the consideration of the ability of the embryo to appropriate and assimilate this nutriment. May it not be possible that one embryo will assimilate more nutriment or the same amount of nutriment more perfectly than another embryo, so that from eggs containing exactly the same amount of nutriment, males or females will be hatched according to the assimilative powers of the embryos, those having the most perfect capacity for assimilation developing into females, those with less capacity into males? If this can be answered in the affirmative it may throw some light upon the controlling of sex, and may give us a method of some value to be used in connection with the proportioning of the food. This method will be to produce assimilative capacity in the embryo as well as to provide the proper amount of nutriment, in a large degree and amount if pullets are needed, in a smaller degree and amount if cockerels are desired.

The eggs from hens are larger than those from pullets, but whether the proportion of white, out of which the chicken is formed, and the yolk, which is stored nutriment for his growth, vary, it would require a delicate analysis to determine. This at least is certain, hens give a greater quantity of yolk, and from hens one naturally should expect, other things equal, to hatch a greater number of pullets than from females yet immature. And so far as my experience goes, with numerous exceptions to the rule, there is a tendency for hens to produce more females than for pullets to do so. And this tendency is considerably increased when a two or three year old cock is used to mate with the hens. Being fully mature is it unreasonable to

suppose that the union of his sperms with the mature ova of the hens should produce a stronger embryo than would a young male bird, not yet fully matured and especially if he is mated to pullets, and an embryo which has greater assimilative capacity? And if the supposition is not unreasonable and nutrition really is a very important factor in determining sex, then if we wish pullets rather than cockerels, is it not wise to have our matings to consist of fully matured hens, and females are not fully matured until they are about two years old, and cocks two or three years of age?

I am aware of the fact that sometimes two and three year old cocks are less reliable breeders than yearlings, yet where they are so it is usually the fault of the breeder, for by over feeding over or showing he has reduced the fertility of the cock. If the cock had been kept well nourished and yet not loaded down with fat, if he had been exhibited but a little or not at all, and if he had not been used for breeding in his first year but kept by himself, or if used he had been taken out of the yard and kept separate and apart from females till his services were again needed, he doubtless would have been more valuable as a stock bird in his second than in his first year. I have had four year old Indian Game cocks prove as reliable breeders as any yearlings, but they were properly treated to insure the preservation of their vitality and activity. And in Game Bantams I have known a six year old cock to be a perfectly reliable breeder, fertilizing nearly every egg laid by the hens with which he was yarded.

And if we would use mature stock and could so feed it as to cause the hens to lay eggs with large yolks, packed with nutriment, so to speak, we might be reasonably successful in controlling sex and be able to secure a high percentage of pullets, while on the other hand we should look to younger stock, fed somewhat differently, to secure for us the high percentage of males desired.

So far as the application of this method to fowls is concerned it is largely theory and it now needs practical demonstration. What we wish to know with some degree of positiveness, can be found in the following questions.

- 1st. Can sex of chickens be regulated?
- 2nd. Can it be regulated by feeding?
- 3rd. What must we feed to secure a preponderance of pullets?
- 4th. What must we feed to secure a preponderance of cockerels?
- 5th. What mating, in respect to age will give us the largest percentage of pullets?
- 6th. What mating, in respect to age, will give us the