

ARIZONA POULTRY STATE FEDERATION

Exposition Number Tucson

YEAR BOOK NUMBER, 1928

YEAR BOOK NUMBER, 1928



First Annual Arizona State Poultry Federation Show at Tucson, January 5, 6, 7, 1928

Arizona State Poultry
Federation

Official Year Book
1928

TUCSON, ARIZONA

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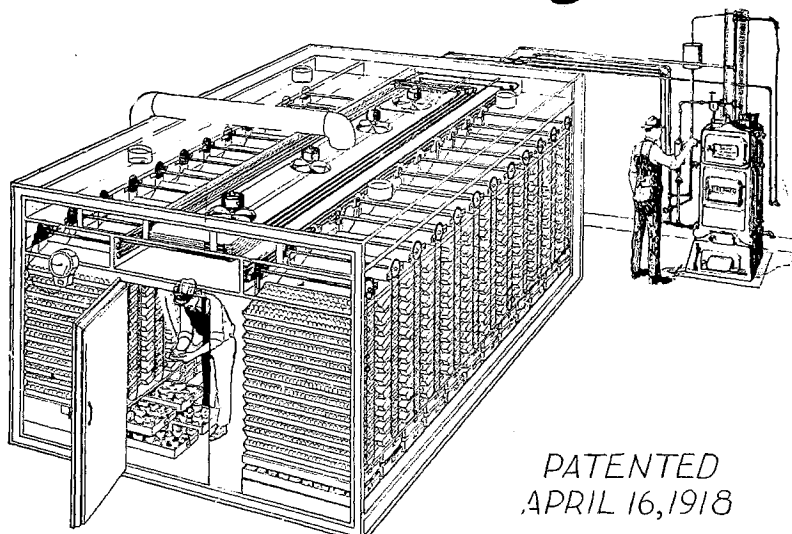
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I got 300 of your star mating white leg-horn chix last April and they were a fine bunch. They are now beginning to shell out the eggs.

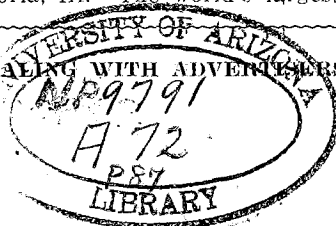
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Official Year Book

Edited by
H. EMBLETON
H. B. HINDS

ARIZONA POULTRY STATE FEDERATION

Official Year Book

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H. EMBLETON
H. B. HINDS

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PURPOSES

To further the advancements of the poultry interests of the State.

To create more interest and better spirit by sponsoring poultry shows. One show shall be designated as the State show, which shall be held under the auspices of the Federation.

Assist in securing proper poultry legis-
lation.

Foster a movement for better chicks for Arizona.

Support national and state movements that are set aside for poultry recognition.

Support necessary educational and ex-
perimental work.



W. F. FETTERLY



H. B. HINDS

STANDARDIZATION OF POULTRY PRODUCTS

By P. G. SPILSBURY

President Arizona Industrial Congress

Perhaps no branch of agriculture has greater possibilities of development in Arizona than has the poultry industry. In natural conditions and potential markets it has opportunities for extensive growth, but at the same time it has certain very vital problems that must be solved by poultrymen themselves before the industry can attain the size and stability which other factors warrant.

The principal problems of the poultry industry in this State are what are usually called marketing problems. It would be better, however, to call them problems of organization and standardization. If standardization of production and organization of distribution can be established, marketing will take care of itself. The future of the industry here rests to a great extent in organization and standardization.

The chief assets of Arizona's poultry industry are favorable climatic conditions for the production of eggs and poultry; a large and growing State market, and extensive outside markets within reasonable shipping distance that can be developed for any future excess production. Its main liability is lack of standardization of its products, and fortunately, it is a liability that can be removed.

It is generally understood that Arizona is importing about half of the eggs it consumes, and it also is generally understood that imported eggs dominate the Arizona market in public favor. There obviously is room in home markets for a much larger production of eggs, but it is equally obvious that to gain these markets Arizona eggs must be able to compete with shipped-in eggs, and this will be especially true when production reaches the point where Arizona will have eggs to ship to outside markets.

There is no doubt but that one of the greatest handicaps

Arizona poultrymen now have is the lack of standardization in their product. Thus far Arizona eggs have only been eggs, sold by poultrymen to retail stores and wholesale dealers, graded by each dealer according to his ability, and offered to the public with almost no uniformity of grade. Some have been good eggs, some have been fair eggs, but the public has never been certain as to just what it would get when it bought Arizona eggs. In contrast, shipped-in eggs have come mainly from highly-specialized organizations and have reached the public in uniform grades, under established brands, and with a reputation for being of dependable quality.

Under these circumstances, buyers have shown a preference for imported eggs. They were no better, in many cases, but they were uniform in quality from one month to the next; they had a reputation. Once Arizona eggs can be placed on the market in uniform grades, under established brands, and establish a reputation for dependable quality, there will be no difficulty in obtaining top prices in home markets and entering outside markets.

To establish standardization of Arizona eggs, however, requires organization. It cannot be done so long as poultrymen deliver their eggs to dozens of stores, with each store grading differently. It can be done by having the grading done by the poultrymen's own organizations. Wholesale and retail dealers would welcome such a step, for it would save them a great deal of trouble and expense, and the operating expense of such organizations, once they were well established, would be more than taken care of by the increased returns to their members. California in particular has shown how successfully centralized associations can handle grading

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BABY CHICK TROUBLES

By H. B. HINDS, University of Arizona

The foundation of each year's flock is the baby chick, and the success of any poultryman is dependent on how well he is able to take care of these chicks. A large "leak" in the poultry business occurs when they receive mediocre attention. It is noticeable that the largest percentage of losses occur during the first six to seven weeks, which is called the critical period of a chick's life. Also that a large percentage of this mortality is of a preventable nature.

The mother hen with her few chicks requires little attention, but brooding chicks by artificial methods brings in new problems. The introduction of the large colony brooders makes it possible to raise chicks in larger numbers and with less labor than when chicks with hens or in smaller brooders. Following are some of the things that increase infant mortality, and some things we can do to reduce it.

CROWDING

One of the large losses among artificially brooded chicks results from crowding. If they become chilled they crowd together for warmth. The chicks at the bottom of the pile usually die or become stunted, as the digestive system is upset and they will eat very little. The vitality is lowered and they become an easy prey for diseases and ailments which healthy chicks escape. Also chicks grow very rapidly, and thus must be given floor space according to age and size. Close contact makes the spreading of disease, lice and worms an easy matter. Following are some things which will assist in remedying these conditions:

1. Avoid extremes in temperature. Use the chicks as your thermometer. If they settle too close or crowd toward the stove, increase the heat. Have the house large enough

so they may get away from the heat of the stove if it becomes too hot.

2. Do not brood large numbers together. Three hundred to four hundred is the ideal number for one stove.

3. Round off the corners of the house with inch mesh wire. This prevents piling in corners.

4. Teach chicks to roost early. In most cases they can go to small roosts when six weeks old. Put wire under roosts so they can't fall through or get under the roost.

LICE

When chicks are brooded with hens, the hens should be treated with sodium flouride before the chicks hatch. When brooded artificially, little trouble is anticipated, provided sanitary methods are followed. Chicks which have lice may be dusted with the same powder as used on the old hens. Use the pinch method when they are about a week old. Put one small pinch on the back and neck and the other below the vent. To avoid this trouble see that the birds are free from lice before the little ones are hatched. It is less work and more effective.

INTERNAL PARASITES

A large amount of loss occurs each year by chicks being infested with worms. This is shown by a stunted growth, or in some cases by death. The only sure diagnosis is to actually find worms in the intestines, but a thin, emaciated bird with ruffled feathers and retarded growth is a good subject for investigation.

Grow chicks in clean ground each year. Feed a 2% tobacco dust in the mash as long as the worms are present.

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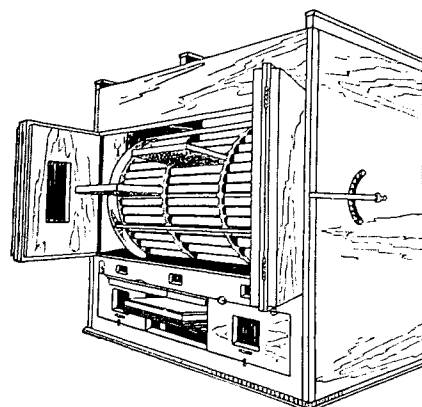
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The First Annual State Poultry Show under the auspices of the Arizona State Poultry Federation bears out the importance of poultry both in Pima County and the State of Arizona.

Tucson Chamber of Commerce

THE POULTRY INDUSTRY IN THE SALT RIVER VALLEY OF ARIZONA

By B. M. BEMIS

Industrial and Agricultural Secretary Phoenix Chamber of Commerce, Phoenix, Arizona

The results of the Egg Laying Contest which has now been held for five years at the University of Arizona, at Tucson, has attracted nation-wide attention to the poultry industry of Arizona. The fact that this contest is among the leading contests of the United States in average egg production is not accidental. The climatic conditions obtain over a considerable area of southern Arizona, where the elevation ranges from 250 feet, as at Yuma, to a little over 2,500 feet, at Tucson. In passing, it should be said that poultry does well at higher elevations and there has been a marked increase in the number of laying hens in some of the other sections of the State where climatic conditions may not be quite as favorable, but where close-by markets afford inducements which compensate for higher altitudes and lower temperatures.

Conditions throughout the country, of course, have been somewhat unfavorable for poultry during the past season. Arizona poultrymen have been no exception in this exceptional year, although many poultrymen report very fair profits even during this period of low prices of eggs and high priced feed.

The Agricultural Inquiry Board of the Phoenix Chamber of Commerce obtained some figures from a number of poultry growers who had kept accurate account. From this report we quote as follows:

"The average size poultry farm, or the amount of land used for poultry, is slightly over three acres. Most poultry growers favor considerable range, and recommend one-half acre to one acre for flocks of 500 birds. It appears, however, that there are several poultry growers who are confining their flocks to a small range and getting very satisfactory results.

"There seems to be a somewhat conflicting opinion concerning the relative number of pullets to hens, some recommending as high as 25 per cent pullets and 75 per cent hens. The majority, however, report that the best results will be obtained with one-half the flock pullets and one-half old hens, although they should be maintained in separate yards and houses. One poultryman reports that the average production of pullets is 175 eggs annually and that of hens 125. This same producer reports that his net profits on pullets is \$2.00 each, and the net profit on hens \$1.25.

Eighteen Salt River Valley poultry owners that have kept accounts, all with flocks of more than 500 birds, report a net profit for each hen over cost of feed and replacement of \$1.86 per year. The average annual production is estimated, by these eighteen poultry owners, at 150 eggs.

"In this connection it might be said that in ordinary commercial production it is not possible to keep records which will determine accurately the average profit, for the reason that the successful poultryman is culling continuously, every

month of the year, and consequently the size of the flock does not remain the same. It is believed, however, that the average production is a little over 12 dozen a year."

The cost of feed here is not materially higher on an average than Coast prices, because a large percentage of the feed is produced locally. With the new land coming into cultivation, the probability is that grain prices will continue to maintain a fairly favorable price for the poultryman.

Market prices of eggs, particularly since the co-operative marketing organization, the Poultry Producers of Arizona, was organized, have been on a reasonable parity with San Francisco markets. This marketing organization has the support of some of the largest distributors of eggs throughout the Salt River Valley. So far the eggs have been marketed pretty largely through these distributors. It is planned, however, to place the Association eggs through retail stores in order that the identity of the Association may be preserved and consumers given an opportunity to purchase local fresh eggs in sealed cartons.

Arizona unquestionably offers a field for high-class breeders producing stock. There are a few breeders who have demonstrated their ability to breed high producing birds, as evidenced by the Arizona Egg Laying Contest mentioned at the beginning of this article. The demand for better stock, however, and particularly stock that is noted for the production of large eggs, is greater than the supply. While there are a number of hatcheries here doing a splendid business and producing very high class chicks, there is a need for some system of accreditation similar to the accredited hatcheries in California and other States. This will undoubtedly come in time.

The particular advantages which this section of Arizona offers to poultry producers is the mild climate and possibility of growing green feed throughout the entire year.

There are a number of very successful poultry growers who have no roost or laying houses—the birds roosting out of doors on specially designed roosts. Some poultry producers cover these roosts with a roof and enclose the perches with burlap during about two months of the winter—December and January. Some do not cover them at all, and as far as I am able to learn, no one who has tried the outdoor system has gone back to the old and more expensive system of housing. However, results are not conclusive as yet, and until some experimental data has been obtained we hesitate to advocate this system too strongly. We understand some experiments are being conducted at the Poultry Plant of the University of Arizona, and the United States Poultry Experi-

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ORANGE BRAND FEEDS

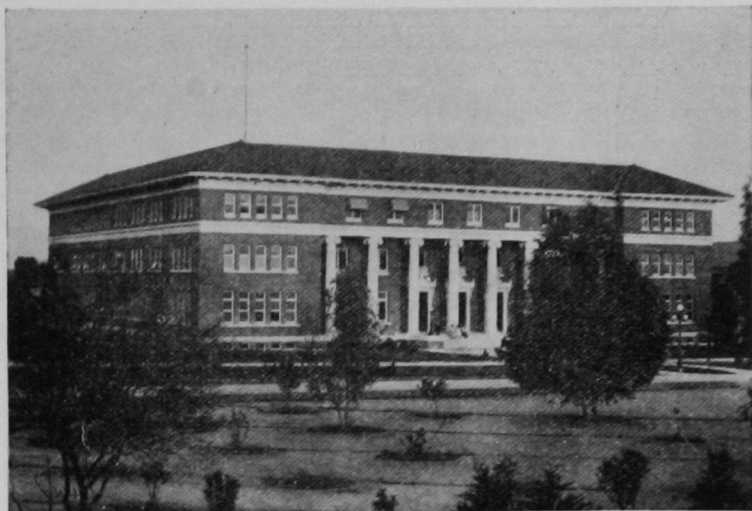
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THE POULTRY OUTLOOK FOR 1928 FOR ARIZONA

By C. F. ROWE

Extension Poultry Specialist, University of Arizona

In surveying the poultry situation in Arizona for 1928, the first question that one asks is, "Is there a surplus or deficit of poultry and eggs produced?" The answer is very easy when we look at figures of 1927. During the year just closed some fifty carloads of eggs and 300,000 baby chicks were shipped into the State to supply home needs. These figures, when expressed in terms of dollars, would mean three-fourths to one million dollars that went outside of the State during the past year.

In the face of this shortage, poultrymen say they are not making money on their flocks. Flock co-operator records substantiate this in many cases. With these known facts existing, let us dig in and see if reasons are not available.

As I see it, there are about four conditions causing the trouble. First, low producing birds; second, a disorganized system of marketing and distribution; third, seasonal production; and fourth, competition. Let us briefly discuss each of these factors and see what we find.

First: The average annual production per bird in Arizona is said to be 71 eggs per year. If this figure is correct, it certainly is to be regretted, yet it is above the average for the United States. Seventy-one eggs per year is not enough to pay expenses. Low production per unit is suicide in any line, whether farming, mining, or manufacturing. If we are to realize a profit on our flocks the production must be increased. Space prohibits me from going into this phase of subject-matter and management methods.

Second: We have no state-wide system of marketing or distribution. One producing community is bucking another, while another State is supplying our non-producing com-

munities. In many instances we are unable to hold those markets we have, because we have not learned the lesson of quality. I would not lay all of this fault at the feet of the producers, for I know of some merchants who use this as a shield for handling cold storage eggs of a quality inferior to local products. Much educational work has been done along this line, and I feel assured that a great deal will be accomplished in the near future. It will surely require the co-operation of ALL producers as well as distributors.

Third: Our production is so heavy in the spring and early summer months that a temporary over production exists, which is destructive to producers so far as prices and profits are concerned. A very prominent poultryman of this State recently stated that "If Arizona produced her own baby chicks it would take 25,000 cases of eggs off the market during the months of February, March and April." If this is true, and I have no doubt that it is, it seems we have a solution to heavy spring production. Can we ask or expect our poultrymen to buy chicks at home until we can put out a product equal in breeding and quality to what we are now buying? Poultrymen are anxious to buy at home when they are assured they can get chicks equal to what California is producing. For our own protection it seems imperative that we start an accredited flock and hatchery system. Practically every State has put this work over and is reaping the benefits. Arizona will do it in 1928.

Fourth: Competition is the life of a business, yet it somehow becomes very destructive. During our seasons of low production, dealers are forced to use cold storage eggs

(Continued on page 10)

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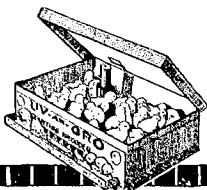
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THE A B C OF TURKEYS

By X. Y. Z.

It must be a revelation to the visitor from the eastern States to see the ease with which turkeys are raised in Arizona. Here, while large flocks are not common as yet, turkeys are raised in comparatively large numbers with little effort. Most diversified farms have a small turkey flock, to which practically no attention is given. In many parts of the United States turkeys can be raised, but the time and trouble spent is worth more in cold cash than is received from the sale of the finished product.

The purpose of this article is not to discuss in detail all of the features of successful turkey raising, but rather to mention some of the "high points" which may result in success or failure to those who engage in the business.

THE SELECTION OF A VARIETY

There are six varieties of turkeys recognized as standard varieties by the American Poultry Association. The six are the Bronze, White Holland, Bourbon, Black, Narragansett, and Slate. The Bronze is the heaviest according to Standard weight, and is probably the most popular in Arizona and throughout the country as a whole. However, the selection of a variety should depend upon the individual who is to raise them. He or she should consider carefully the different varieties and decide which will be the most profitable when all points are considered. At this point it might be well to mention that some breeders, particularly in the sections where wild stock is obtainable at a reasonable cost, make a practice of introducing wild toms or hens into the breeding pens. This is done to increase the vigor of the young stock produced. However, wild stock are usually smaller and lighter in weight than domesticated stock, and the introduction of the former may result in a decrease in size of the resulting poults. Since turkeys are raised chiefly for meat, this practice may or may not be advisable.

CARE OF THE BREEDING STOCK

As with nearly all, if not all, classes of domesticated animals, better results are obtained when the breeders are allowed free range. If breeding pens are used, one acre should be allowed for each 15 or 16 birds. It is a common practice to mate 15 hens, yearlings or older, with one vigorous young tom. If young hens are used, it is probably best to mate them with yearling or older toms, although such toms may cause some difficulty because of their heavy weight. Inbreeding should be avoided, for inbreeding often results in lowered vitality. After hens are three years old, they generally will not lay enough eggs to warrant keeping them in the breeding pen.

THE NUMBER OF EGGS PRODUCED, AND THEIR CARE

As with the chicken hen, the number of eggs laid by a

turkey hen is variable, according to the individual. Some lay but one or two clutches—a clutch consisting of about 20 eggs—and some lay several more. After clutch has been laid, the turkey hen usually becomes broody and wants to set. The eggs should be collected daily and stored at a temperature between 50 and 60 deg. F. It is necessary to turn the eggs daily, taking care to handle them gently. If the eggs are stored at the temperature suggested, they can be kept from 10 to 14 days before setting. If they are stored at higher temperature, it is not advisable to hold them more than 7 days.

INCUBATION

The eggs may be artificially incubated, or hens may be used. The number of eggs placed under a hen will depend upon her size. Chicken hens may be used, and each will cover from 9 to 12 eggs. The turkey hen will often cover as many as 20 eggs. One successful turkey raiser known by the writer sets part of his available eggs under turkey hens. A V-shaped coop is provided and a nest made of straw is placed on the bare ground under the coop. The coop has slatted sides to provide ventilation, but the slats are close enough together that predatory animals cannot disturb the hen or the eggs. Water should be available at all times, and feed may either be kept before the hen at all times, or fed once daily. It is a good plan to dust the setter with lice powder, for lice will bother the hen and will be a considerable detriment to the young poults.

Artificial incubation of turkey eggs is becoming popular, and is a decided success with many breeders. With most incubators, the temperature is kept at 101 deg. F. throughout the entire hatch, but it is advisable to consult the manufacturer about this point. Turkey eggs should be turned two or three times daily until the 26th day of incubation, after which they should not be handled. Twenty-eight days is the usual incubation period, although a day or two more is often required. It is possible that artificial incubation of turkey eggs will eventually displace the hen as a means of incubation, even as artificial incubation has almost displaced the hen as a hatcher of hens' eggs.

BROODING

Either brooding by means of breeder stoves, or brooding with turkey or chicken hens, may be used. Both ways have their advantages and disadvantages, and the choice will depend to some extent upon the number of poults to be raised. If chicken or turkey hens are used, it is best to confine them to a coop and provide small yards for the poults for a week or two. The coop and runways should be moved daily, to prevent soil contamination. Later the mother and brood

(Continued on page 12)

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IS THERE A SURPLUS IN POULTRY

By HARRY EMBLETON

University of Arizona

Whether or not there is a surplus in poultry or poultry products is a question in the minds of everyone who has the interests and the welfare of the poultryman at heart. Looking at the situation from a national standpoint, it seems that there is a surplus. This seems to be substantiated by the decreasing prices throughout the entire country. This past winter there were 2,000,000 cases of eggs in cold storage over and above what has been heretofore at the same period. The Bureau of Economics at Washington tells us that the hen population has increased faster than the human population. Evidences, therefore, point toward a surplus in poultry on a national basis.

Now let us consider the situation from the standpoint of the industry in Arizona. Contrary to the popular notion, there is not a surplus of poultry and poultry products being produced within the State boundaries. This is indicated by the fact that market reports show that carloads of eggs are still being shipped into Arizona. True, the State is getting all the poultry and eggs she needs, but they are not being produced within the State. It is also true that the national surplus has some influence upon poultry and egg prices in Arizona. However, in an 8,200 mile trip across the continent last summer, 1927, observations on egg prices indicated that Arizona eggs were retailing at a higher price than in any other State in the Union. As supply and demand sets prices, this in itself is evidence that there is not a surplus produced within the State, that the national prices do not entirely fix Arizona prices, and that the consuming public prefer fresh home produced eggs to shipped-in eggs.

How long will the nation continue to produce a surplus of poultry products? Of course this is problematical. The Arizona Industrial Congress, after two years of investigation in one of the local cities, found that any surplus set the price for the whole commodity. It did not matter whether this surplus represented one-tenth of one per cent, or fifty per cent of the entire product, the result was the same. This held true whether the surplus was a seasonable or a yearly surplus. What holds true of a city holds true for a State, or nation, in this respect.

That there will be a readjustment back to a normal condition is certain, for no industry can exist when the producers in that industry cannot get a price for their product above the cost of production. Just how long it will take for this readjustment to come about is again questionable.

Many of the smaller producers and those lacking capital to carry them over this temporary depression will be forced out. As these are forced out, the surplus will be reduced. When the surplus is entirely eliminated, prices will again be back

to a normal condition. Inasmuch as any surplus sets the price on the whole commodity, and prices have dropped only during the past few months, it would indicate the surplus is not great, and a small percentage of producers dropping out would again bring conditions back to normal.

What should the present producers do in order to tide them over this temporary depression? The most natural course would be to reduce overhead in order to lessen the cost of production. Experiments being conducted at the University of Arizona indicate that resorting to the buying of feeds that are cheap in their initial cost will not reduce overhead, but will increase it. Buying cheaper stock to save money will not do it unless the higher producing stock can be bought cheaper. Experiments conducted at the above named institution indicate that the better producing stock, even though higher in initial cost, is really more economical. The construction of cheaper houses, especially for the warmer parts of the State, may be practical, as experiments now in progress indicate. The enlarging of flocks up to the point where the present amount of help available can take care of the maximum number of fowls, would reduce the overhead per dozen eggs and give a greater volume of dozens from which to make a profit. Eliminating the competition of one poultryman with another on a given market, by joining together in associations, so that there is orderly marketing instead of disorderly marketing, would undoubtedly help to a considerable extent. The grading and candling of eggs in order to compete with out of State competition, would be a big step in the right direction.

THE POULTRY OUTLOOK

(Continued from page 6)

to supply demand. The trade becomes accustomed to those eggs and when our production increases it is often difficult to freeze out, as it were, this trade. Some dealers deliberately place these cold storage eggs in cartons and sell them as fresh eggs. I am told that there is a law existing which requires that cold storage eggs be labeled as such, and I think it is the Christian duty of the poultrymen to demand that this law be enforced. This would certainly call for organization. Such organization exists in the State Poultry Federation. They propose to endeavor to solve the four questions discussed in this article. It will be impossible unless we can make the organization a reality in numbers as well as form. If you are going to make poultry raising a business, I would say now is the time to act.

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SOME COMMON DISEASES AND THEIR TREATMENT

H. B. HINDS, University of Arizona

Disease	Cause	Symptoms	Treatment
Chicken Pox	Virus infection	Ulcers on head and adjuncts	Remove by soaking with warm water. Paint with iodine, cover with carbolated vaseline.. Vaccination — 2 lb. sulfur in 100 lbs. mash.
Coccidiosis	Ameba	Cheesy matter in cecum. Bloody droppings. Spotted liver. Wings droop, high temperature.	Sanitation. 1-3 teaspoonful catechu to a gallon water. Sulpho-carbolate tablets in water. Buttermilk for drink or in mash.
White diarrhea	Blood disease of baby chicks caused by bacteria.	Wings droop, ruffled feathers, yolk not properly absorbed. Whitish discharge from bowels. Peep most of time, prominent abdomen.	Permanganate of potash in water. Bichloride—1:10,000 in water. Sulphocarbolate in water. Remove chicks to clean hovers and destroy infected chicks. Buy next chicks from W. Diarrhea 'free stock.'
Diarrhea	Any irregularity	Note droppings	Epsom salts.
Roup	Colds, drafts	Swelled head, cheesy material in nostrils. Offensive odor. Remain away from flock. Ruffled feathers.	Prevention—Remove diseased birds. Disinfectants in water. Locate cause. Dip head in solution of stock dip of dilution: 1-8 pint stock dip in 3 gal. water.
Nutritional disease	Lack of vitamin A in ration	White exudate in eye. White nodules in esophagus. Kidneys pale color.	Yellow corn in ration. 10% alfalfa leaves. 2% cod-liver oil.
Rickets	Lack of vitamin D in ration	Drooped wings. Weak legs. Unthrifty appearance.	Chicks in sunshine. 2% cod-liver oil.
Cholera	Bacteria	Birds found dead under roost. Yellowish diarrhea. Comb dark color. Excessive thirst. Ruffled feathers. Congestion of internal tract. Hemorrhages in heart and lungs.	Remove birds to new quarters. Kill and burn all diseased birds. Sanitation. Disinfectants in water.
Typhoid	Bacteria	Greenish diarrhea. Comb generally pale. Enlarged liver and kidneys. White spots on heart and liver.	Same as for cholera.
Paralysis	Unknown	One or both legs affected. Wings paralyzed. Blindness.	Sanitation. Rear chicks on clean soil.
Tuberculosis	Microorganism	"Going light." Comb pale. Lesions on spleen, liver and intestines.	Treatment useless. Destroy whole or all birds over one year old for several years. Sanitation.
Round Worms	Infested ground	Young birds mostly. Unthriftiness, drooping, paleness. Finding of worms in intestines.	Tobacco in capsules or in mash. Follow with Epsom salts.
Tape worms	Infested ground	Same as round worms.	1 teaspoon concentrated lye, 1 pint wheat, 1 pint oats: Boil two hours. Feed to birds with all water they will drink. Follow with salts.
Bluebugs	Infected house	Find the bugs in house.	Carbolenum. 1 to 10 in crankcase oil.

THE A B C OF TURKEYS

(Continued from page 8)

may be allowed free range, care being taken that they return to a place at night where they will not be molested by predatory animals. It is absolutely imperative that the poults not be allowed out on the damp grass, or in the rain.

In artificial brooding, the temperature under the hover at first should be 98 deg. F., and this should be gradually lowered until the polts no longer require heat. Here, as with chickens, the grower must be extremely careful, as too little or too much heat will cause considerable damage. The poults should not be overcrowded in the houses. The houses should be moved to clean soil frequently. When the poults start to roost, the houses may be used as roosting places.

It is difficult to distinguish sex before the poults are 3 or 4 months old. A small tuft of hair appears on the male at that age, this tuft being preceded by a fleshy growth. The tuft does not appear on the females until they are much older, and then is smaller and finer than on the male.

In young toms a rudimentary spur appears on the inside of the shanks, this later developing into a rather long, sharp spur.

We will not suggest any formulas, but will suggest that a formula suitable to the locality may be obtained from local turkey growers, or by writing to the State Agricultural College or University. However, under any conditions, don't feed the poultry until they are 48 hours old, for nature has provided for their food during that period through the medium of the egg yolk being taken into the body prior to emerging from the shell. Feeding too soon causes much trouble and many deaths. Don't overfeed, for overfeeding of poults is often responsible for a high mortality. Feed often and little at a time. Keep them hungry.

DISEASES

The subject of diseases will not be discussed in this article, but reliable information may be secured by writing to the State Agricultural College or University. One thing above all others must be emphasized—practice a rotation of range, for the diseases which cause the greatest losses in turkeys are spread through contaminated soils. Remember this in regards to diseases: it is comparatively easy to prevent them, but practically impossible to cure them. A minute devoted to prevention will have more effect than a day devoted to some cure.

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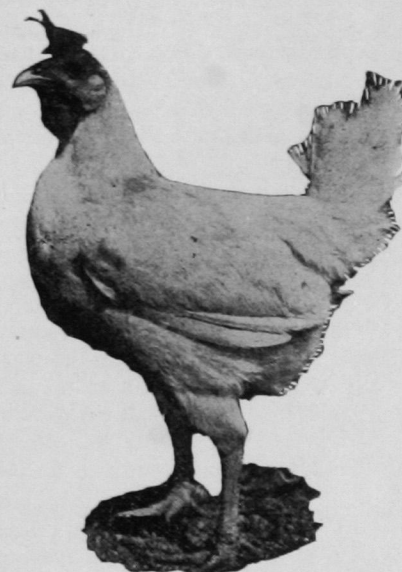
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WHY DON'T MY CHICKENS LAY?

By H. EMBLETON

University of Arizona

Why don't my chickens lay?"

The above question was put to the writer the other day. Of course, there could be many answers to this question. They may not have the blood behind them which would assure them being good layers. It may be that they were temporarily being retarded by disease such as chickenpox, or possibly they were hatched too early, which was causing them to go through a partial molt right when the selling price of eggs was the highest. However, my first question to him was: "How are they being fed?" it being found from experience that when hens are not laying, the matter of a lack of proper feeds and a correct feeding system can always be suspected with good foundation. In answering the question he said he was feeding them a plentiful supply of good grain, the cost of which was breaking him up, financially, because of the fact that he was not getting any eggs in return. It was obvious that this admission indicated that he was not familiar with the underlying principle of feeding poultry for egg production.

In order to understand why it is necessary that fowls receive various kinds of feeds in certain definite quantities, one would have to understand what is going on within the fowl's body during this process of egg production, before the egg is made visible to the eye by being laid.

The seat or starting point of all egg production is the ovary, an organ made up of varying sizes of yellow bodies greatly resembling a bunch of grapes. There is only one of these organs located just beneath the kidney and against the upper wall of the body cavity. These individual bodies are made up largely of fat, the raw supply coming from the fatty parts of the body. It will be well to keep this point in mind in connection with the discussion that follows. As these bodies, which eventually become the yolk of the egg, mature and reach their maximum size, they break out of the sac surrounding them and fall down into the mouth of the oviduct, an elongated, glandular organ about two feet long, extending from just below the ovary to the vent or outlet from the body. It is interesting to note that the break in this sac is made at a place through which no blood vessels pass. It is, therefore, made without bleeding, although this sac is criss-crossed in every direction with blood vessels, which is an indication as to the wonders of nature in the working out of its various processes.

After this yolk drops into the oviduct, it is caused to move down through the oviduct by the contraction of the oviduct behind it. As it moves down this organ, the friction between the yolk and the wall of the oviduct causes various sets of glands to secrete material which goes to make up the various parts of the egg. First, the thick white or albumen is formed; then the membrane formed just within the shell, after which the thin or watery albumen, which is taken in through the membrane and causes the egg to plump out into its normal shape; and lastly, the shell, with its coloring matter. The egg is then completed and is ready to be laid.

From this it is evident that a certain class of feed must be fed in order for the body to be able to lay up this reserve supply of fat. This class of feed is known as carbohydrates. It also indicates that fowls before going into a heavy period of laying should have a reserve supply of fat stored up within the body. Then there must be a supply of raw material from which the "whites" of the egg can be formed. This material is entirely different to that from which fat is formed. It is derived from such sources as milk in its various forms, meat scraps, tankage, fish meal, cottonseed meal, soy beans, alfalfa, etc. In feeding terms they are known as proteins, and incidentally are feeds that oftentimes cannot be

produced on the farm, and when purchased are very expensive. This is the group of feeds usually lacking in a poor ration. Then there must be a supply of material from which the membrane can be formed. This is furnished through the grains. Also eggs are not complete without the shells. Although a minor amount of shell-forming material is found in both of the above mentioned groups, this is not enough for maximum production, so a supply must be made available by the feeding of ground bone, oystershell, or some forms of limestone, all of which dissolve readily when taken into the body, and can, therefore, be readily assimilated by the blood. This group is known as mineral feeds.

From the above it is obvious that all three classes of feed must be fed in order to have egg formation go through to completion. However, this is not sufficient within itself, for these three groups must be fed in such proportions as to obtain the greatest production from the amount of feeds which are fed. A sufficient amount of grain for the formation of 100 yolks may be fed, but if only enough protein feeds for the formation of 50 "whites," and only enough mineral matter to form 25 shells is fed, of course the greatest number of eggs to be expected from this system could only be 25 complete eggs.

How is one to know just what proportion of grain, white forming material, and mineral matter should be fed to get the greatest amount of completed eggs? This must be determined by experiments carried out through an agency qualified and equipped to carry on work of this sort—the various agricultural experiment stations located within the several States of the United States. This type of work is too expensive for each individual poultryman to undertake on his own farm. The balance or proportion between the above-mentioned group of feeds is known as the nutritive ratio, and is usually designated by the N. R.

Other sources of material found in a good feeding ration must be considered. There are the green feeds, which are not fed primarily because of their feeding value, but mainly because they contain unknown substances designated as vitamins. All forms of milk are very strong in vitamins. Certain feeds, such as cod liver oil, raw tomatoes, citrus fruits, are strong in certain individual vitamins. Although the nature of vitamins is not known, it is an established fact that the absence of them in a ration causes serious troubles and diseases. In action, they can be likened to lubricating oil in aiding the smooth running of a machine. Then, too, salt must be placed in every ration, not only because it makes the feed more palatable, but also because it helps to make up the mineral supply. Then there is charcoal, which should be added because of its action in absorbing gases within the digestive tract.

U. OF A. LAYING RATION

Scratch:

200 lbs. whole wheat,	200 lbs. whole hog or milo,
200 lbs. cracked yellow corn,	100 lbs. whole oats.

Dry Mash:

100 lbs. wheat bran,	25 lbs. bone meal,
100 lbs. yellow corn meal,	25 lbs. cottonseed meal,
100 lbs. wheat shorts,	25 lbs. linseed meal,
100 lbs. ground oats or barley,	25 lbs. alfalfa meal,
125 lbs. meat scraps (54% protein or more),	25 lbs. fine oystershells or ground limestone,
25 lbs. dried buttermilk,	15 lbs. fine charcoal,
	5 lbs. salt.

In addition to the above, a plentiful supply of green feed, such as green cut alfalfa, rye, lawn clippings, kale, rape,

(Continued on page 22)

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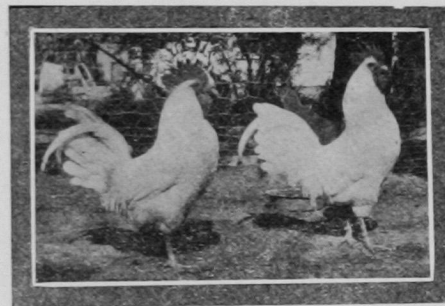
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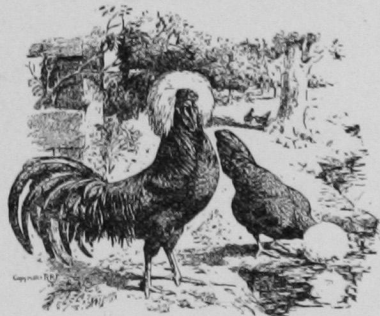
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RABBIT RAISING

By JOHN W. WELLS

R. F. D. 6, Box 152-A, Phoenix, Arizona.

Rabbit breeding is one of the most fascinating industries that one can engage in. When one confines his efforts to raising pure bred stock, which he will eventually do if he stays in the business, he will find it a matter of absorbing interest, greater than is found in the raising of any other class of animals, as one can see in each succeeding generation of approximately 9 to 10 months the improvements made through his efforts. Profit as well as pleasure is the reward of the true rabbit fancier. There is no other animal that return greater profit on the money invested, if properly handled. The care and breeding of rabbits is neither hard nor tedious.

The following pointers are given for the purpose of guiding the beginner along the road of successful rabbit raising; also to enable him to avoid costly mistakes when starting in the rabbit business, one should decide whether he will devote his time to raising breeding stock or supplying the demand for meat rabbits.

In the raising of breeding stock there will be a certain amount of culls to be sold as meat rabbit, but this is only a side issue with the party who is raising good breeders. On the other hand, the party who aims to supply the demand for meat rabbits must first learn the size of fryers that are mostly in demand in his particular locality. Some localities demand a small fryer, while others want larger ones. Having learned the kind of meat preferred, he should then purchase his stock with the idea of supplying the local demand. Always keep in mind that good stock of any variety will give the best returns, as the young will make faster and surer growth than those produced by mongrels.

POINTERS IN SELECTING BREEDING STOCK

First, get the best breeding stock you can afford. Next, don't see how many you can raise, but see how good you can raise them, for breeding stock, three to four litters a year. A nurse doe is necessary to take care of the surplus. Four is plenty for a doe of good quality to raise. If raising meat rabbits, one may raise as many as five litters a year, and does should not raise over six at a litter. To attempt to raise more will merely result in a bunch of runts. They

will lack both size and weight. Six properly raised will outweigh nine improperly nourished. Don't think a registered doe can produce every one of her young a quality rabbit. Cull out any inferior young and butcher them. Don't try to work them on a beginner as breeding stock, as you gain nothing, but lose out in the long run and ruin the rabbit industry. Don't advertise Giants and not have any weighing eleven pounds, as you are just hurting yourself. Remember, the best is none too good for meat, or fur, or show. Try to decide what bred you like best, and push it with all your might. Don't change every time the moon does. Get the breds you like and stand by them. Never try too many breeds, as you cannot bred them true. To win, a man has one kind, and studies it to perfection. Don't get mad if your neighbor gets a blue and you get a red ribbon. He had a better rabbit. Try to breed one that will get him next show. Remember that you should get type and color in your buck and size and bone in your doe. Never breed a doe when in moult, as she will have young with a poor coat of fur. If in meat rabbits, it would be advisable to watch your matings, if you are selling meat rabbits that dress 3½ to 4½ pounds. It is possible to get prime fur in smaller breeds. One thing should be impressed on the rabbit raiser, and that is that the rabbit is a hardy animal if kept in clean quarters. The rabbit, being naturally a clean animal, cannot stand filthy quarters, and such conditions are liable to result in losses to the breeder. Don't feed young under two months of age green feed, as it will cause them to have slobbers. Feed a balanced ration; oats, rolled barley and ground corn, and good quality alfalfa hay. It might be well to add here that because of its clean habits, rabbit meat is one of the most highly nutritious and easily digested meats known, and can be fed to patients when no other kind of meat is permitted them. The rabbit breeder should be all means join the national organization, the American Rabbit and Cavy Breeders' Association. If raising breeding stock, he should also join the specialty clubs representing his particular breeds. This means he not only comes in contact with the most noted breeders of the country, but he is also enabled to study the standards that govern each breed.

STANDARDIZATION OF POULTRY PRODUCTS

(Continued from page 2)

and distribution, and the growth of the California poultry industry to its present extent would have been impossible without organization.

The type of organization that appears to be most successful is a co-operative association to which its members deliver all eggs, which grades the eggs and then distributes them through wholesale dealers, thus taking advantage of existing agencies to save the expense of setting up extensive sales machinery. In other words, centralized grading has been the backbone of organization success—or, to put it another way, standardization. An association can quickly establish a reputation for uniform quality under a uniform brand, where an individual poultryman, even with the same grade of eggs, would have difficulty in gaining public confidence in a long period of time.

It should be emphasized, however, that poultrymen must not expect too much when they do organize. An organization can not keep the egg market from going up or down, but it can keep market fluctuations in more narrow bounds. It can not get its members top prices for all their eggs, but it can get them top prices for their best eggs. It can not greatly

increase returns all at once, but it can, over a period of time, increase returns very materially over former seasons. But above all, it can only function as successfully as its members will let it. If they stick by it, give it time, give it their support, and give it the best quality production they can give, it can take care of grading and marketing far more satisfactorily than any individual poultryman could do for himself.

A long step forward in developing Arizona's poultry industry was taken last summer with the formation of the Poultry Producers of Arizona, Inc., by the Maricopa County Farm Bureau, with support of the Industrial Congress, followed by plans for similar organization at Tucson through the Southern Arizona Poultry Association. If properly supported, these organizations will accomplish remarkable results for poultrymen of these two sections—but they will succeed only to the extent that they are supported.

Co-operation is a word that has become sadly overworked, but nevertheless it is a word that stands for something. Only the practice of co-operation in grading and marketing can assure the success of Arizona poultrymen and Arizona's poultry industry, for except in the case of a few unusually well-equipped individuals, standardization can be attained only by organization, and organization requires co-operation in actions as well as in words.

Slogan: A POULTRY INDUSTRY THAT WILL SUPPLY ARIZONA NEEDS

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THE ECONOMIC PHASE OF BACILLARY WHITE DIARRHEA

By P. S. DICKEY

Manager Washington Certified Poultry Association

Probably the most talked of thing in the poultry industry today on the Pacific Coast is Bacillary White Diarrhea and the regulatory measure concerning this disease now in force in the States of Idaho, Oregon and Washington.

The purpose of this article is to discuss the economic phase of testing for this disease. Every poultryman in the State is interested in knowing whether the benefits derived from testing and eliminating the disease as far as possible, will offset the cost involved.

The B. W. D. germ is carried by the adult bird and transmitted through the egg to her offspring. It is usually localized in the ovaries and discharges with the yolk into the egg.

The baby chick at the time of hatching absorbs or takes into its system the yolk of the egg. If the yolk happens to be infected, the disease is passed into the chick. Biologically speaking, this may not be "inherited," but the fact remains that the chick gets the disease.

Under the heading of Bacillary White Diarrhea, the committee on Poultry Diseases of the United States Live Stock Sanitary Association reported in part as follows at the last association meeting, December 1-3, 1926:

"This disease constitutes a most serious menace to the poultry industry as it is now organized. In the organization of this industry, large hatcheries, using the eggs of a great number of flocks, distribute their output of day-old chicks to a numerous clientele. They thus contribute to the dissemination of disease whenever the eggs of virus-carrying fowls are used in their operations. * * *

More than 25 years ago, Dr. Rettger, of Yale University, described this disease in poultry, and later isolated the organism causing it. It has been demonstrated that this disease causes economic losses in three ways, as follows:

1. Decreased production by infected hens.
2. Decreased hatchability of eggs from infected hens.
3. Increased mortality among chicks hatched from infected hens.

Dr. W. A. Hooker, of the office of Experiment Stations, United States Department of Agriculture, in 1925, in a review of investigations of Bacillary White Diarrhea, concludes in part:

"The work with *B. pullorum* as here reviewed would seem to support the conclusion of Beaudette in 1925 that more is probably known of this disease than any other malady of the common fowl, and it would appear that a sound basis has been laid for practical control and even eradication."

In a survey made by the Oregon Agricultural College in 1927 to determine the seriousness of the disease, its introduction and spread, replies from 18 States were as follows:

Question: Do you consider B. W. D. a serious disease of poultry

Answers: Ten States, yes; 3 States, most serious; 5 States, one of the most serious.

Question: Has the disease been introduced into your State by chicks from commercial hatcheries?

Answers: Twelve States, yes; 2 States, probably; 1 State, no absolute evidence; 1 state, spread by hatcheries; 1 State, do not know; 1 State, no reply.

Question: Has the development of the commercial hatchery increased the danger from this disease?

Answers: Seventeen States, yes; 1 State, no reply.

Can anyone doubt, in the face of the above evidence, the wisdom of the campaign now in progress by the members of the Washington Certified Poultry Association to rid their flocks of B. W. D.?

Now as to the cost of making this test. The three factors entering into the cost are the leg bands, taking blood samples of the hens, and the laboratory work in connection with testing the blood samples.

For three years the association has been doing this work for its members as follows:

	Cents
Cost of leg bands.....	1
Taking blood samples.....	3
Cost of laboratory test.....	7
Total cost per hen.....	11

Interpreted in cost per chick, we can conservatively figure as follows: Average number of hatching eggs per hen, 30; average hatch, 60%; total chicks per hen, 18.

This will then make 18 chicks cost 11c, of 6/10 of 1c per chick.

Now from the standpoint of the commercial poultryman buying 1,000 chicks and paying cost for the test. One thousand chicks at 6/10 of 1c per chick will increase his cost \$6.00. At the standard price of 18 cents per chick this cost will be offset by saving 34 chicks, or a decreased mortality of 3.4%.

Again, this cost spread over 400 pullets amounts to 1½ cent per pullet. With eggs at an average price of 30 cents per dozen, it will take only 20 dozen or 240 eggs to offset the cost, or an average increased production of only 6/10 of an egg per pullet.

From the standpoint of the hatchery, 100 eggs, at 11 cents for 30, will cost \$3.67. At 18 cents each it will take 20 chicks, or 2% increased hatchability, to cover the cost.

(Continued on page 21)

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VALUE OF GOOD FOUNDATION STOCK FOR EGG PRODUCTION

By HARRY EMBLETON

Professor of Poultry Husbandry, University of Arizona

With the price of eggs declining to a point where the commercial poultryman is about ready to give up the fight, any information that will tend to suggest a means of reducing the overhead, if at all feasible, will undoubtedly be welcomed.

Unfortunately, some methods which will reduce overhead cannot be put into practice and give results "overnight," and for that reason are never considered, yet just such suggestions may have a more permanent result than those that can be accomplished in a shorter length of time. The one herein set forth falls within the "long time" group.

If through any means it is possible to double the egg production of each individual hen without seriously increasing the overhead, it goes without saying that the net revenues would naturally increase in proportion. Some might say: "That looks well on paper, but it is one of those theories which will not work out in practice." Well, let us see if it will work out in practice.

The winning pen of the Third Arizona Egg Laying Contest consisted of six birds, including an alternate, each laying an average of 247 eggs. The poorest pen in the same contest averaged 140 eggs for each bird. There was a difference of nine dozen eggs per bird between the two pens. But, possibly the cost of the extra food consumed to get the additional nine dozen eggs more than offset any advantage in the extra production. Let us see. Each bird in the highest producing pen consumed 80 pounds of feed at a cost of three cents per pound, or a total cost of \$2.40. Each bird in the poorest pen consumed 60 pounds of feed, which at three cents per pound would cost \$1.80. This means that it cost sixty cents more to feed each bird in the highest producing pen for one year, or an increase of 33 per cent in feed cost. This does not seem to be in the right direction to lower overhead.

Now let us look at the other side of the question. Because of the fact that the higher producers would have to lay during a period when eggs were higher in price, in order to produce this greater quantity, the average price of their eggs was forty cents a dozen as compared to thirty-five cents in the case of the lower producers. Two hundred forty-seven eggs equal approximately 20 dozen, which at forty cents would bring the gross income to \$8.00. The 140 eggs, or approximately 11½ dozen, at thirty-five cents, would bring a gross income of \$4.02. Deducting the difference of the feed costs in the respective pens, this leaves a margin of \$3.38 profit in favor of the heavier producers. In other words, the heavy producers made a clear profit of \$3.38 above feed cost more than did the lower producers. The maintaining of heavier laying strains on a flock basis is decidedly a means of reducing overhead, or increasing net

profits, which amounts to the same thing.

How then, can this same result be brought about on a flock basis with only an ordinary producing flock with which to start. Here again figures from actual results obtained at the Poultry Experimental Farm of the University of Arizona will be cited.

At the end of the twelve-month period on October 31, 1924, it was found that the White Leghorns which had just finished their first producing season had only averaged 120 eggs per bird. The best individual had only produced 182 eggs. The following spring, male birds were purchased, the sires' dam of which had laid 315 eggs, and their dam had laid 297 eggs. These were mated to the original foundation stock which had produced the pullets that had averaged only 120 eggs. At the end of the next twelve months, when a check was made of the production of the pullets which had been sired by the males from the high producers, it was found that the average production of the White Leghorns had increased from 120 eggs to 193 eggs, or an increase of approximately six dozen eggs for each bird. This increase at thirty-five cents per dozen meant a gain of \$2.10 per bird over and above what the previous generation had made. With a 1,000-bird flock this proportionate increase in production would represent a gain of \$2,100.00. Surely better foundation stock is a means of reducing overhead, or increasing net profits. The highest individual production during this period was 267 eggs, as compared to 182 eggs for the preceding period. Twenty-eight individuals had exceeded a 200 egg production.

The next season a similar practice of using male birds from high producing dams and sires was repeated, in order to further increase production. A check of the production of the entire number of offspring was not made. However, the following spring, when it became necessary to choose breeding pens, it was possible to select a pen of 14 hens that had an average production of 268 eggs. A second pen of 15 hens had an average production of 251 eggs; a third pen of 15 birds an average production of 242 eggs, and a fourth pen of 53 birds an average production of 227 eggs. The 97 hens taken collectively had an average production of 240 eggs as compared to the 120 eggs of the flock three years previous. The first bird on the farm to lay 300 eggs was hatched during this period. This bird laid 310 eggs during the twelve-month period.

Certainly it would be an economical and profitable practice to make use of male birds which have come from high producing sires and dams, in order to increase flock averages and in this way reduce the net overhead and increase net profits.

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WHAT CAUSES CULLS?

By H. B. HINDS

Recently I saw a summary of a questionnaire answered by 785 breeders, as to the cause of culls. It was interesting, and said in part that the seven main causes of culls are:

1. Inferior breeding..... 31.6%
2. Too little and unsuitable food..... 30.4%
3. Parasites and insect pests.....15.1%
4. Poor housing and care..... 12.4%
5. Disease 4.9%
6. Exposure 2.9%
7. Other causes..... 1.7%

Note that nearly 1/3 of all culls come from inferior breeding stock. Be careful in the selection of breeders or the source of your chicks, or you will be fighting a losing battle under a big handicap. Why start with chicks from inferior breeding stock when you are sure to have at least 1/3 of culls?

Good chicks can be made culls by too little and unsuitable feed. Approximately another 1/3 is doomed to be made unprofitable from this source. Following down the list, we can see other causes for culls. Most of them are preventable, and it is up to us as to the number of culls we have each year. When we stop these "leaks," we will then not be swamping the Extension Poultrymen or our County Agents with requests for culling information. Let's try to lower the number of culls. It can be done, and it is worth while. Let's not

think that culls are a necessary evil which goes with the poultry game.

BACILLARY WHITE DIARRHEA

(Continued from page 18)

The above figures are charging the entire cost of testing to each one of the three sources of losses. Supposing that each one of the three benefits equally, the cost then for each one will be one-third of the total.

This then will make the cost for testing offset by: Decreased chick mortality of 1.13%; increased lay per pullet of .2 of an egg; increased hatchability of 7%.

The benefits derived by the commercial poultryman will be in two of the three sources of losses. If then he were to stand two-thirds of the cost involved of .6 cents per chick, his increased cost would be .4 cents, or less than 1/2 cent per chick.

Dr. W. A. Hooker, in his review of the B. W. D. investigations, quoted above, further states: "It is not too much to say that when the accreditation work, now in its infancy, has become universally adopted, and the disease practically eliminated from American poultry yards, the saving as a result will far exceed the total amount now appropriated annually for research work at the Experiment Stations."

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NORMAL CHICK GROWTH

Are your chickens making the proper growth? Compare them with the chart given below as a guide.

Figures from U. S. D. A.

White Leghorns			Rhode Island Reds		
Wk.	Wt. per Week	Lbs. Feed Per Chick Per Week	Wt. Per Week	Lbs. Feed Per Chick Per Week	
0	.08	.00	.08	.00	
1	.11	.07	.11	.08	
2	.13	.15	.16	.16	
3	.26	.25	.26	.24	
4	.38	.32	.36	.33	.51
5	.50	.41	.54	.44	
6	.69	.51	.74	.60	
7	.90	.66	.96	.69	
8	1.09	.74	1.23	.88	3.42
9	1.22	.84	1.52	.94	
10	1.41	.93	1.80	1.01	
11	1.56	.98	2.01	1.07	
12	1.80	1.00	2.30	1.19	7.63
13	1.93	1.07	2.39	1.16	
14	2.06	1.04	2.51	1.15	
15	2.21	1.12	2.76	1.23	
16	2.36	1.12	2.91	1.39	12.56
17	2.49	1.33	3.14	1.54	
18	2.63	1.30	3.22	1.60	
19	2.72	1.37	3.44	1.52	
20	2.90	1.43	3.68	1.69	18.91
21	3.05	1.39	3.85	1.70	
22	3.12	1.36	4.03	1.73	
23	3.23	1.33	4.16	1.67	
24	3.28	1.41	4.30	1.76	25.77

THE POULTRY INDUSTRY

(Continued from page 4)

ment station located at Glendale, Arizona, is now planning a project which will be very complete. Birds will be taken from the brooder, the flock divided, one-half kept in houses and one-half kept in the open. The result of this experiment at the end of the pullet year should give a very good idea of the practicability of this plan. The cost of houses, however, is not exorbitant. Most poultry producers estimate the cost for houses and yards at \$1.00 for each laying hen, or a little less.

Most of the older producers, who have been in the business for a considerable length of time, are not at all discouraged with the lower profits this past season, but are planning on continued activity, with the expectation that normal profits will obtain, except in occasional years, such as the past season.

Probably, all things considered, conditions here are fully as favorable for poultry producers as in any section of the United States, and should it be determined that it is economical to adopt the out-door system of handling poultry, Arizona would perhaps have the edge on all the rest of the world.

BABY CHICK TROUBLES

(Continued from page 2)

Give a dose of Epsom salts occasionally at the rate of ½ pound to 2 gallons of water.

FILTHY RUNS

Runs which are foul and dirty weaken chicks. Such runs harbor eggs of worms and disease-producing parasites. Clean all runs and sow to some grass. Keep chicks away from pig pens and manure heaps.

LACK OF SUNLIGHT

Sunshine is of value in preventing leg weakness. It is also a good disinfectant. Chicks, however, should not be exposed to the direct rays of a hot summer sun, but should have shade to use as they desire.

LACK OF VENTILATION

Impure and moist air is dangerous to chicks. Keep houses well ventilated and exposed to the sunshine.

TOE PICKING

This is primarily a bad habit. It starts when chicks are confined and when one picks off the toe of another. The bleeding toe attracts other chicks, with the result that they start picking this chick, and if not removed it is literally eaten alive. Also they pull tail and wing feathers. It is a habit which requires immediate attention.

Proceed as follows:

Do not have an over-crowded condition in the brooder house.

2. Get the chicks outside as soon as possible.

3. Feed plenty of green feed.

4. Keep the chicks busy.

5. Feed plenty of sour milk.

6. Remove injured chicks when noticed and paint wounds with tar.

LACK OF PURE WATER

Birds require large amounts of drinking water, and will not drink enough if it is filthy. The body of a chick contains approximately fifty-five per cent water, which is constantly being lost through the droppings and respiratory system, and must be replaced. Use sanitary fountains.

IMPROPER FEEDING

A chick feed must be fresh, and contain not only the necessary balance, but also the vitamins. Vitamine D is probably the most important of these for young chicks, the deficiency of which causes leg weakness.

A chick is born with a lunch in its hip pocket good for forty-eight hours, therefore chicks should not be fed too soon after hatching. About the 19th day of incubation the yolk of the egg is taken into the chick's body and is used as a prepared food for the first two or three days after hatching.

Feed sparingly but often throughout the day. Increase amounts as chicks grow. Spoiled green feed should never be given chicks. Sour milk contains lactic acid, which is very beneficial and is an excellent feed for young chicks.

DIARRHEA OTHER THAN BACILLARY WHITE DIARRHEA

Improper diet, chilling, overheating, sand scours, in fact anything which will cause digestive disorders, produce a diarrhea. These forms are non-infectious, and should not be confused with the Bacillary White Diarrhea. They are due to your management, and a correction of the condition causing the trouble will prevent a spread of the disease.

"WHY DON'T MY HENS LAY?"

(Continued from page 14)

sprouted oats, etc. Alfalfa leaf meal previously soaked in water will make a good substitute for the green cut feeds.

The above ration is known to give results, because it has been used in the Arizona Egg Laying Contest, conducted by the University of Arizona, and used on the experimental farm of this institution for the past four years. The splendid results obtained in the Arizona Egg Laying Contest during the past four years was partly due to the use of this ration.

The above ration should be fed so that for every pound of grain consumed there should be an equal amount of mash consumed. If this is not done, the best results will not be obtained. The grain should be scattered in a deep litter of straw and the mash fed dry in a self-feeding hopper. Too much emphasis cannot be laid upon the importance of a plentiful supply of clean, fresh water. For forced feeding, when the price of eggs are high, the dry mash can be moistened so that it is in a crumbly state and fed as a wet mash. The fowls should be fed an amount which can be cleaned up in 15 or 20 minutes.

If the above ration is fed to a flock which in the first place has good production blood behind it, and selection for vigor has been practiced, there will be no question regarding the good production obtained from it.

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ARIZONA HATCHERY ASSOCIATION

By J. ALBERT LIGGETT, President

A new Co-operative association has been formed in the Salt River Valley under the name of the Arizona Hatchery Association. This organization has been formed for the purpose of keeping the chick business in Arizona where it belongs and also to help give the purchaser better chicks.

The writer started in the hatchery and poultry business in 1915. At that time we paid no attention to the size of eggs, for small ones brought the same price as extra large. At that time the 200 egg hen was unknown and now 300 eggs hens are common. The hatchery business has grown in proportion. Chicks are hatched now by the millions. One hatchery has turned out as many as 75,000 in one day. The one trouble with a hatchery this large is that the chances are you never get chicks from the same flocks twice in succession. The moderate sized hatchery from which you can get the same strain each year, giving you the same good results each season is where you want to buy.

I have been fighting for large eggs for the last 10 years because it is the hen that lays the large egg as a pullet that makes the money in the fall.

The Arizona Hatchery Association is going to see that all chicks are from standard sized eggs, and that every cock or cockerel is from heavy egg producers and that they are hatched right.

The Association has asked the University of Arizona to help us organize an Accredited Association. We are going to have all the flocks inspected from which we get eggs and in this way we will see that you are protected in the quality of the chicks that you get.

The common hen is out of date for she will not pay for her feed. When you buy your chicks do not figure on the cheapest chicks; ask for and get the best. Lots of people go around hunting for the cheapest chicks and as a rule they are the most expensive that they can buy, for they never make a cent off them. Any one would be willing to pay twice as much for a calf that came from a five gallon cow as one from a three gallon cow. She is really worth four or five times as much.

Every time you send out of the State you help break down the price of eggs here and you take the eggs off the market there and boost their prices.

The writer has seen thousands of chicks shipped in and I cannot see that the egg production is any better than from chicks hatched in Arizona. The Arizona laying contest has proved that Arizona hatched chicks have produced layers equal to any other State in the Union.

Californians are great boosters and they believe in telling the world what they have. We have just as good or better and are going to do a little boosting of our own and tell the people of this state what we have at home. All we ask is to give us a trial and buy from the Arizona Association Hatcheries and any time you are disappointed with the chicks let us know about it.

The margin of profit is small now on eggs. Demand the best and be willing to pay the best price for good stock, for good stock cannot be produced at a real cheap price. Do not buy cheap stock and regret it later.

Buy Arizona chicks and keep your profits in the state.

THE VALUE OF POULTRY SHOWS

By W. F. FETTERLY

Superintendent Poultry, Arizona State Fair

The first Poultry Show on record so far as we are able to learn was held in Utica, New York, in connection with the New York State Fair of 1845, which was held at that time in this city. Since that time the New York State Fair grounds have been moved to Syracuse, New York, a distance of about 60 miles west of Utica.

At this first show only a mere handful of birds were displayed, and they were of the common barnyard variety. Not at all like the birds we see on exhibition today. During the fall of 1846, about a dozen exhibitors showed poultry at the Worcester, Mass., Fair. These were also of very ordinary stock, and had few qualifications, either in type or color, to entitle them to be classed as show birds. These shows, so far as we can learn were the beginning of Poultry Exhibitions in the United States.

The first actual Poultry Show of record, and at which nothing but poultry was displayed, was held at the Public Garden, Boston, Mass., November 15 and 16, 1849. This show resulted in nearly every State and County Fair in the United States making a place for Poultry Exhibits within a very few years thereafter. And many of the larger cities held special Poultry Shows, including Pigeons, Rabbits and other pet stock, during the late fall and early winters from 1849 on.

Since these first Poultry Shows, we have gradually built up our flocks, until today we have the best Poultry Exhibitions in the world and are displaying with a question of a doubt, better quality than any other nation on the face of the globe.

After the Civil War, the interest in pure bred poultry increased rapidly. Each year showed a marked gain in both the number of shows and the quality of the stock exhibited thereat. And the local so-called Mid-Winter shows were held wherever it was possible to bring a few hundred head of good birds under one roof. The main reason for the

Mid-Winter shows perhaps, is because as a usual thing, birds show to a much better advantage during December and January than at any other time during the entire year. The young birds at this time are fully developed, and the old birds are through the moult and consequently show to much better advantage than is the case at the earlier shows held in connection with the Fall Shows and State Fairs.

The Poultry Show, has without question, done more to stimulate interest and breeding of pure bred poultry than all other things combined, or thought of, up to this time. Although, of recent years the Egg Laying Contests, which are now being held in nearly every civilized country, are doing an immense amount of good towards the production of birds that will lay a greater number of eggs and therefore make the owners better profits.

We are asked many times in the course of a year, "Of what value are Poultry Shows?" Our answer is always the same. First it is of unestimated value from an advertising point of view. It places the breeder's name before the buying public, and gives them an opportunity to see your birds on display. Besides, he has his name appear in as many as six different publications, carrying a list of the winnings. Second: It gives the breeder a chance to compare his birds with those of his competitor, thereby seeing why his birds are winning or losing as the case may be. So, if for no other reason it is well worth showing his birds for the educational value alone. Last but by no means least, I always say; "show your birds for the sport of the thing." If you are defeated this year, improve the quality of your flock by the introduction of breeding stock or hatching eggs, and resolve to come back stronger than ever next year and beat your competitors. By improving your flock you will find that it is easier to dispose of your surplus at a fair price and thereby make more profit.

Slogan: A POULTRY INDUSTRY THAT WILL SUPPLY ARIZONA NEEDS

Dependable
and
Highly
Nutritious

Nicholls Orange Brand

Poultry
and
Stock
Feeds

Complies with the best information on scientific feeding in the most practical way. It adds **relish** to **ration** and that speeds greater productivity.

Our biggest boosters are feeders themselves, which would not be the case if we were not giving them real feeding service

Send for
Free Booklets

{ "Hello! Here come our Baby Chicks."
"Mash and Scratch"
"All-Mash"

Ballinger Fuel & Feed Co.

Stone Ave. at Sixth St.—Tucson, Arizona—Phone 400

POULTRY IN ARIZONA IS A MILLION DOLLAR INDUSTRY

Eighteen careful, conservative poultry producers in the Salt River Valley have reported to the Agricultural Inquiry Board of the Phoenix Chamber of Commerce an average profit of \$1.86 for each hen over cost of feed and replacement.

Many successful poultry growers in the Salt River Valley are maintaining flocks at a high production with houses. Probably this is the only place in the United States where outdoor poultry keeping is practical. Where houses are not used the expense is less than in most localities. General estimates of equipping a poultry plant with houses and yards is about \$1.00 for each laying hen.

GREEN FEED CAN BE GROWN HERE THE YEAR AROUND

Egg prices in the Phoenix markets for the past few months have been from three to five cents above San Francisco prices.

All things considered Arizona and especially the Salt River Valley offers especial inducements to commercial poultry growers.

We extend our congratulations to the Officers and Members of the Arizona State Poultry Federation, for their untiring efforts to promote the Poultry Industry of this state.

PHOENIX CHAMBER OF COMMERCE

PHOENIX, ARIZONA

MARICOPA

Attention Poultrymen

Cut Your Cost of Feeding Buttermilk, From $1/3$ to $1/2$ By Adopting MARICOPA Dried Buttermilk, and profit by It's Other Advantages.

Why pay prohibitive prices for a semi-liquid product containing 28% solids and 72% water?

Consider the economic loss in buying expensive heavy-weight barrels, and absorbing the freight on these plus the freight on two-thirds of a barrel of water from

Missouri River Points

Here Are Just a Few Reasons Why You Should Feed MARICOPA Dried Buttermilk

IT IS PURE: An unadulterated milk product unconditionally guaranteed.

THE COST IS MATERIALLY LESS: Don't be confused by the price per pound—compute the price per pound of milk solids. The barrelled condensed buttermilk now being sold to the poultrymen of Arizona is represented to have a minimum of 28% solids. We have never analyzed any of it which showed as high as 30% solids. Therefore Arizona poultrymen have been paying from 14c to 25c per pound for milk solids in condensed buttermilk, according to the size of barrel purchased, as compared with approximately 10c per pound for the milk solids in MARICOPA dried buttermilk, regardless of whether you purchase 100 pounds or 1000.

IT KEEPS: The moisture and fat content is the low-

est and the lactic acid content the highest of any brand of dried buttermilk we have ever analyzed. These are all factors insuring indefinite keeping quality.

IT IS SAFE: The product is sterile when it comes from our machines. There is no waste or disease caused by mold or mildew. It will improve the thriftiness of flocks.

IT IS CONVENIENT: It takes up less space and involves less bulk weight. One pound of MARICOPA dried buttermilk contains more milk solids than $3\frac{1}{2}$ pounds of condensed. There are no mussy troubles of unsanitary "water caps."

IT SUPPORTS ARIZONA INDUSTRY: Arizona poultry money, spent for milk products, helps Arizona dairymen, and they help everybody.

N. B.:—Now packed in 50 pound tagged burlap sacks; soon to be packed in special paper lined printed burlap sacks, in both 50 pound and 100 pound size.

The Maricopa Creamery Co. MANUFACTURER
PHOENIX, ARIZ.

Sold by the following dealers:

The Phoenix Flour Mills (Arizona Distributors),
Phoenix Seed and Feed Company, Phoenix,
Quick Seed and Feed Company, Phoenix.
Five Points Seed and Feed Company, Phoenix.
Southwest Flour and Feed Company, Phoenix.

Gila Valley Milling Company, Safford.

Southwest Flour and Feed Company, Glendale.
Mesa Milling Company, Mesa.
Glendale Milling Company, Glendale.
Eagle Milling Company, Tucson.
U. V. X. Mining Company (Merc. Dept.), Clarkdale.

"For Chicks, and Eggs, and Meat and Health"

MARICOPA