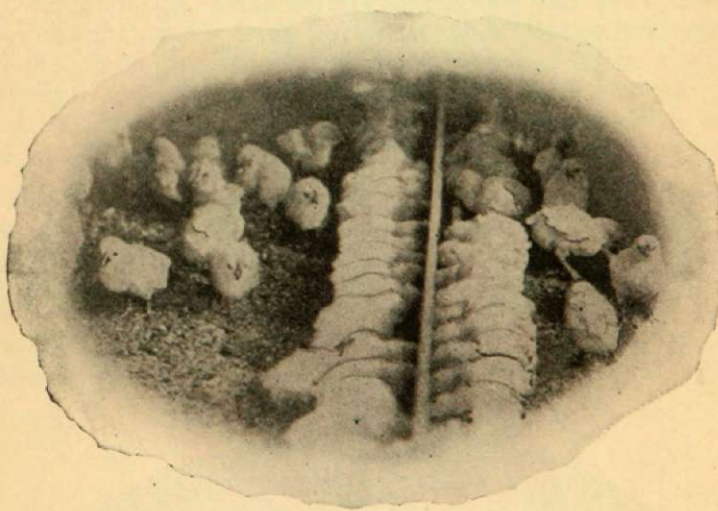


Bulletin 272-A

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## CARE AND FEEDING OF BABY CHICKS

BY O. C. UFFORD AND CHAS. N. KEEN



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COLORADO AGRICULTURAL COLLEGE  
EXTENSION SERVICE  
FORT COLLINS

**COLORADO CHICK-FEEDING SCHEDULE**

During the First 36 Hours Chicks Should be Kept Quiet, and Have Access to a Temperature of 100 Degrees Fahr. Above all, Chicks Should not Become Chilled.

	36 to 60 hrs.	60 hrs. to end of First Week	Second Week	Third Week to Maturity
Grit Charcoal	Sand or gravel for grit	Grit and charcoal in hoppers	Grit and charcoal in hoppers	Grit
Liquids	Water (not too cold)	Water (not too cold)	Water Milk when available	Water Milk when available
Scratch Feeds		A good commercial chick scratch or home mixture of: Fine cracked corn---50 lbs. Cracked wheat-----50 lbs. Feed morning, noon and night in amounts chicks will clean up	Feed Scratch feed in a lit- ter of alfalfa leaves or fine straw, morning and evening	Increase the size of the scratch grains. Increase depth of litter.
Ground or Mash Feeds		A commercial chick starter, rolled, oats, or the follow- ing home-mixed starting mash: Fine yellow cornmeal 25 lbs. Shorts-----25 lbs. Oatmeal-----50 lbs. Keep before chicks in hop- pers.	Keep hoppers filled with starting mash	Gradually change from start- ing to growing mash: Cornmeal-----35 lbs. Ground wheat-----50 lbs. Meatmeal-----10 lbs. Boncmeal-----5 lbs.
Green Feeds			A handful of short, cut green feed to 50 chicks	Plenty of green feed
Eggs		1 boiled or raw egg mixed with starting mash, 1 egg to 40-50 chicks	1 boiled or raw egg mixed with starting mash, 1 egg to 40-50 chicks	
Miscellaneous		Feed scratch on clean boards or paper the first few days.	Let chicks out of doors dur- ing the middle of the day if weather permits	Provide brooder roosts. In- crease range as chicks de- velop. Range should have some shade. Separate cock- erels from pullets.

## CARE AND FEEDING OF BABY CHICKS

BY O. C. UFFORD AND CHAS. N. KEEN

**Brooding.**—Many chick-raising failures can be traced directly to a poor system of brooding. One should never attempt to brood chicks without first being prepared and equipped to care for them properly.

When chicks are to be raised in small numbers, the brooding can be done with hens. An important thing to consider in rearing chicks with hens is to see that the mother hen is entirely free of lice before the chicks are hatched or are given to her, and that the brood coops or quarters where hen and chicks are confined are thoroly disinfected occasionally to destroy mites.

For brooding chicks in large numbers, the colony brooder stove, either the coal or oil burning type is a practical, economical, and reliable method of caring for them. A brooder will pay for itself in one or two seasons in labor and chicks saved. A big advantage of the colony brooder is that the baby chick can always find the warmth to suit its comfort whenever it desires it.

**Feeding Chicks.**—The newly hatched chick should be kept warm and quiet for the first 36 hours. At the end of this time, it will begin to pick at grit and charcoal and begin to drink water. It is best to take the chill off of the drinking water the first few days. The sand or gravel placed on the floor of the brooder house will supply the grit. Chick-sized charcoal can be placed on boards, on papers or in hoppers.

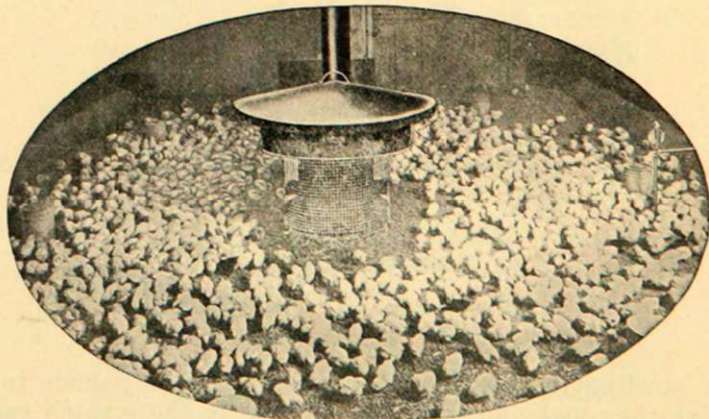


Fig. 1.—Some Poultry Raisers Prefer the Oil-Burning Type of Brooder.



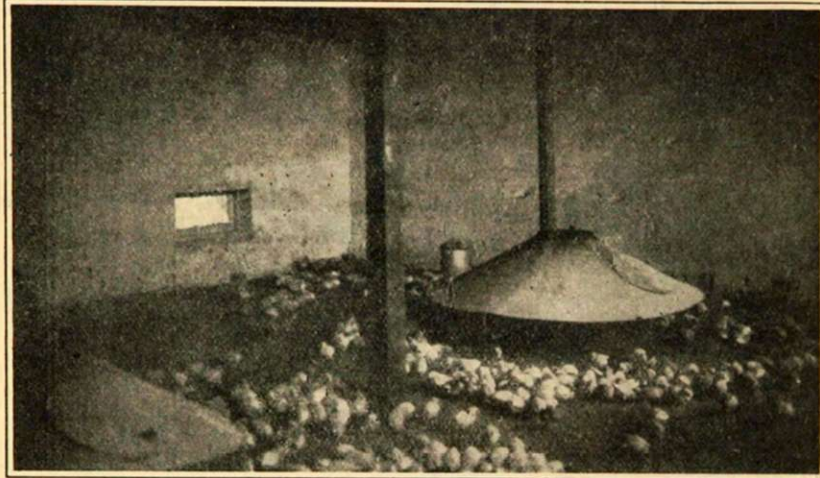


Fig. 2.—Others Like the Coal-Burning Type. Either Type is Satisfactory.

When the chick is at least 60 hours old the first food can be given. This should consist of feeds that are easily digested. Oatmeal or a mixture of certain ground feeds make very good starting foods.

Commercial chick starters and scratch feeds manufactured by reputable companies may be used when it is not convenient for the poultry raiser to mix his own feeds.

The following chick rations are recommended by the Extension Service for those who care to mix their own feeds.

#### Starting Mash

Ground rolled oats	50 pounds
Fine yellow cornmeal	25 pounds
Wheat shorts or middlings	25 pounds

Smaller or larger batches can be made in the same proportions.

#### Starting Scratch

Fine cracked corn	50 pounds
Cracked wheat	50 pounds

If steel cut oats are available add 25 to 50 pounds to the above as they make an excellent addition to the scratch ration.

**Growing Mash**

Cornmeal, yellow	35 pounds
Bran	25 pounds
Wheat shorts	25 pounds
Meat scraps	10 pounds
Bonemeal	5 pounds

Fifty pounds of ground wheat can be substituted for the bran and shorts.

**Growing Scratch**

Medium cracked corn	50 pounds
Whole wheat	50 pounds

In sections of Colorado where kaffir, milo or millet are raised, the kaffir or milo may be substituted for the corn and 5 to 10 pounds of millet can be added to 100 pounds of grain mixture.

See Colorado feeding schedule for feeding practices. (Pg. 2.)

**All-Mash Feeding of Chicks**

Many Colorado poultry raisers are using the all-mash method of growing chicks with satisfactory results. The all-mash method of feeding is the one in which all the materials are ground and fed in hoppers. No scratch feed is given the birds. The method of brooding pertaining to sanitation, proper heat, etc., should be regulated as with other methods of feeding.

The all-mash system has several advantages. It is a simple method of feeding. It is more sanitary as there is no scratch feed thrown on the floor or in dirty litter. It requires less skill in feeding because the mash is always balanced, and it requires less time and labor and regularity than other methods require.

**Rations Without Milk**

Ground yellow corn	85 pounds
Ground wheat	50 pounds
Bran	25 pounds
Shorts	25 pounds
Meatmeal	10 pounds
Bonemeal	5 pounds
Fine charcoal	5 pounds
Fine salt	1 pound

**Rations With Plenty of Sour Skimmilk or Buttermilk**

Ground yellow corn	85 pounds
Ground wheat	50 pounds
Bran	25 pounds
Meatmeal	5 pounds
Fine charcoal	5 pounds
Fine salt	1 pound

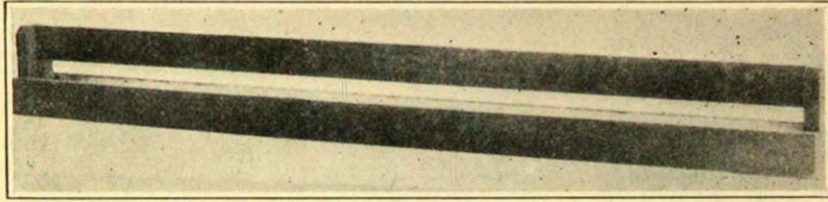
**The Evolution of the Mash Hopper**

Fig. 3.—A Convenient and Sanitary Hopper for Baby Chicks During the First Two Weeks.

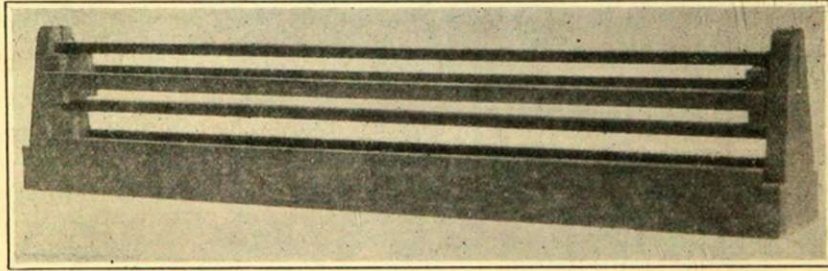


Fig. 4.—When Chicks Are About Two Weeks Old Substitute This Hopper for the One Shown in Figure 3.

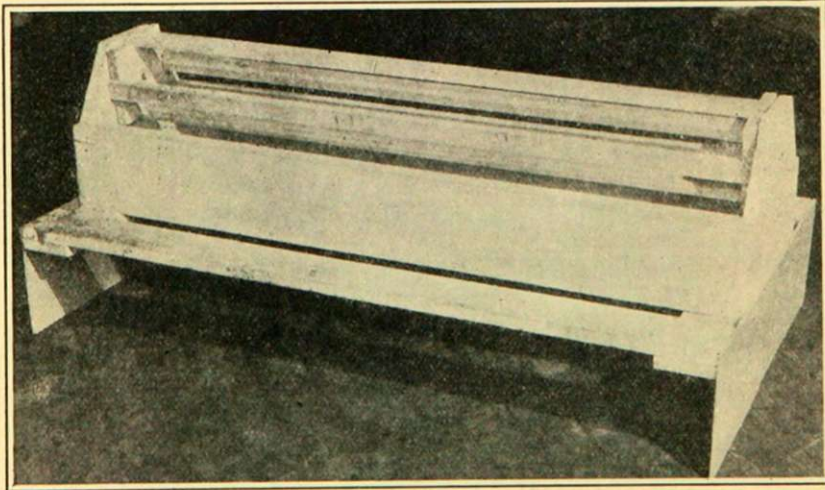
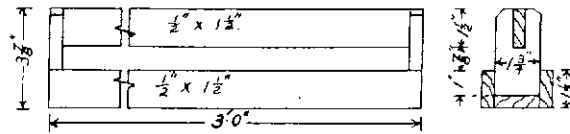
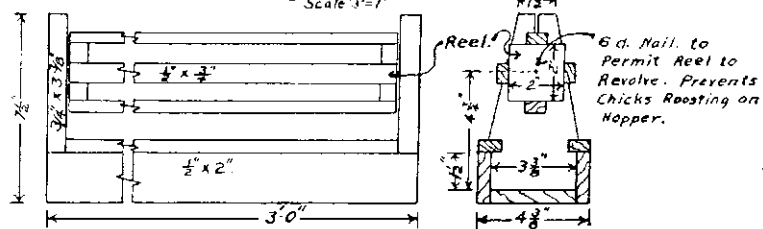


Fig. 5.—The Half-Grown Chick Can Use a Hopper of This Size.



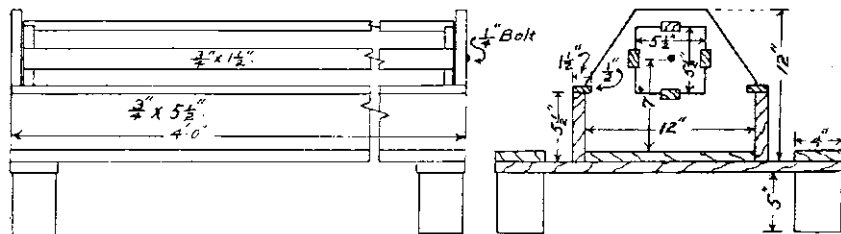
The Chick Starting Hopper

Scale 3"-1"



Hopper for Growing Chicks.

Scale 3"-1"



Hopper for Half-grown and Mature Birds.

**Method of Feeding.**—Provide at least 3 feet of hopper space for each 50 chicks. Increase the size of hoppers at end of second week. Follow the same precautions in brooding that are recommended for the grain and mash method of feeding. Place ground feed or mash in chick hoppers from the first feed, allow the chicks to help themselves. Keep hoppers filled all during the day but feed should be cleaned up at night in order that hoppers may be cleaned and a fresh supply placed in them for the next day.

The same ration is used from baby chick to maturity. It is important that the growing chicks have ample feeding space and easy access to feed at all times with this method of feeding. The all-mash ration should be supplemented at all times with water, grit and green feed. When milk is fed it is advisable to use earthenware, granite or wooden containers. Do not use galvanized or tin containers.

As pullets begin to come into maturity or reach full growth, take out one-half the animal protein and replace with corn for two or three weeks. This will fill out the pullets and give them



a reserve for heavy laying. Gradually bring them onto a laying ration over a 10-day period. If milk has been used in growing the pullets it should be dispensed with during this period.

Handle the cockerels the same as with the other method of feeding.

#### Chick Troubles

**Chilling.**—The baby chick cannot stand to be chilled. It must have access to heat whenever it desires warmth. Bad results from chilling are among the most common troubles with which the poultry raiser has to contend. What is often thought to be white diarrhoea is nothing more than a diarrhoea resulting from chicks becoming chilled. Chicks that have been badly chilled at some time early in their development are usually stunted or retarded in their growth and some will keep dying from no apparent cause even after they have attained considerable size.

Watch the mother hen and her chicks on a cold day. You will notice that she hovers them frequently. The artificially brooded chick must have access to the same temperature that the mother hen provides, whenever the chick feels the need for it.

As the chick grows and feathers out the temperature of the brooder can gradually be lowered. To prevent crowding and piling in corners, roosts should be installed in the brooder house when the chicks are from 3 to 4 weeks of age (see Colorado Brooder Houses, Bulletin 271-A). When chicks are once taught to roost a great deal of one's brooding troubles are over. However, some heat should be provided on chilly nights until all chicks are well feathered and have become accustomed to roosting.

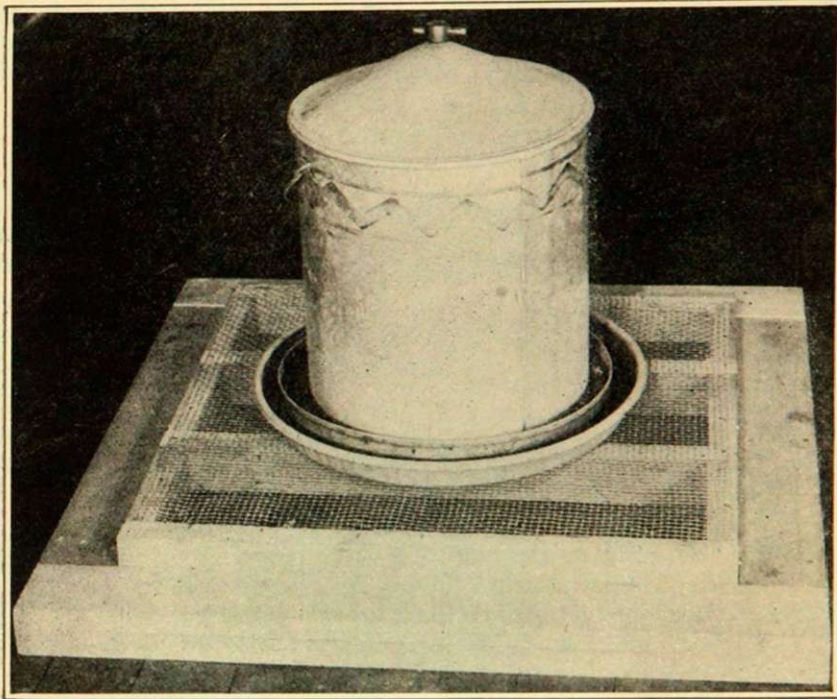
**Overheating.**—Overheating saps the vitality and will cause digestive disorders the same as chilling. The place where the chicks are brooded should be so constructed that the baby chick can get away from any excessive heat and choose the temperature that best suits its comfort.

**Crowding.**—Do not overcrowd. It is better to put fewer than too many chicks under the brooder.

Crowding may result from the brooder house being overheated, forcing the chicks to the corners or too low temperature may cause the chicks to pile around the stove.

Ideal brooding conditions are attained when chicks form a ring around the hover a few inches from its edge. If they crowd under the hover the temperature is too low, if they go to the sides or corners at night the temperature is too high, and when





A Sanitary Drinking Fountain and Stand for Baby Chicks. Clean, Fresh Water Plays an Important Part in the Development and Growth of Chicks.

the brooder house cools down at night the chicks start piling and crowding often resulting in heavy losses. The blocking of corners with boards or wire or the placing of sloping buffers along each wall will help to prevent losses from crowding.

Encourage chicks to start roosting as soon as possible.

**Diarrhoea.**—This ailment is one of the most common affecting baby chicks and is usually due to faulty management of them. It may develop from one of the following conditions: Chilling, overheating, improper feeding, and unsanitary conditions. Diarrhoea is caused by a specific organism. Further information on this disease and its control may be obtained from Colorado Experiment Station Bulletin, Number 293, Bacillary White Diarrhoea of Chicks.

**Coccidiosis.**—This is a highly contagious disease of chickens often causing heavy losses in Colorado. It is especially destructive to chickens from 2 to 10 weeks of age. The younger chicks show a bloody diarrhoea, great weakness and die in from 1 to 5 days. The older birds lose weight. The comb and wattles

become pale and the bird finally becomes unable to stand on its legs. The crop is sometimes full of undigested food.

Bichloride of mercury (Corrosive Sublimate) in the proportion of  $7\frac{1}{2}$  grain tablet to 1 gallon of water for drinking is sometimes effective in controlling the disease.

The California Station recommends large quantities of milk in the chick's ration as a method of control. When fresh milk is used no water or mash should be given. Feed grain twice daily. California recommends the following ration where dried milk is to be used.

Dried skim milk	40 pounds
Wheat bran	10 pounds
Yellow corn meal	30 pounds
Ground barley	20 pounds

The milk should be continued for 2 or 3 weeks after the outbreak. Feed small amount of grain daily.

**Leg Weakness.**—The main causes of leg weakness are:

1. Confining chicks too long on a board or cement floor without their being able to get out on the ground.
2. Damp conditions in the brooder house.
3. Lack of green feeds in the ration. Green feeds contain the vitamins that are so essential to normal health and growth.
4. Brooding under window glass without chicks having some access to direct rays of sun.
5. Worms and Coccidiosis are sometimes attributing causes to leg weakness in older chickens.

**Cannibalism.**—Chicks will sometimes develop the habit of eating some of the members of the flock. Crowding too many chicks into a brooder house with a bare floor is one of the reasons for the habit starting. Persistent picking at toes starts a drop of blood and serious trouble soon results.

Lack of sufficient animal food in the ration may also be a cause for the habit developing, the chicks attempting to satisfy the craving by devouring each other. Plenty of litter on the floor will keep the chicks busy and help to prevent the trouble starting. Remove any injured chicks from the flock and dip the injured toe in tar to stop the bleeding.

**Lack of Water.**—Growing chicks and laying hens require and drink a great deal of water. Growth and production are materially affected when water is neglected. Heavy losses sometimes occur when the water vessel remains dry for several hours and when the chicks are supplied they over-drink with disastrous results.

**Intestinal Parasites.**—Intestinal parasites are often indirect causes of many poultry diseases. Irritation to the intestinal walls resulting from worm infestations makes the bird more susceptible to disease thru its lowered vitality. Sanitary feeding practices and an occasional treatment for worms will go a long way toward controlling many serious poultry diseases.

**Treatment for Round Worms.**—Feed growing stock as a prevention, tobacco dust testing 1½ percent nicotine, at the rate of 2 pounds of tobacco dust to 100 pounds of mash, for a period of 3 or 4 weeks. Give Epsom Salts at the rate of 1 pound to 100 birds at regular intervals during the treatment. For a serious outbreak of worms the following treatment by Beach, of California, is recommended.

For 100 fowls he takes 1 pound of finely chopped tobacco stems and steeps them for two hours in enough water to keep the mass covered. The liquid and the stems are mixed with half the amount of ground feed usually allowed the birds for one feeding. On the evening before the day of administering the remedy, the birds should be fed only half a ration and they should be kept without feed until afternoon of the following day. Then the mixture of tobacco and feed is given and under the circumstances is sometimes readily eaten. Occasionally, fowls refuse the mixture. Two hours later, the birds are given a quarter size ration of ground feed mixed with water containing eleven ounces of Epsom salts for each hundred birds. No difference of dosage to correspond to birds of different ages is attempted, for the matter is adjusted by the amounts of the mixtures that the birds can eat. Reasonable care should be exercised to make certain that birds have equal opportunity to eat.

**Treatment for Tape Worms.**—Kamala at the rate of 1 gram of powder in a capsule fed to affected birds will destroy tape worms.

The cultivation and rotation of the ground where chicks run will help a great deal in the control of worm infestations. (See Fig. 6).

#### Control of Lice and Mites

**Treatment for Lice.**—1. Sodium Fluoride (pinch method).—Place pinches of the powder in different parts of the hen's plumage next to the skin.

2. Dip Method.—One ounce of powder to 1 gallon of water. Use dip method only during warm weather. Do not dip setting hens.

3. Blue-Ointment Treatment.—One part of blue ointment mixed with one part petroleum jelly, vaseline, or lard. Apply small amount around vent. Never use it on small chicks.

**Treatment for Mites.**—Mites hide in cracks and filth in the poultry house during the day, crawling on to the birds at night to feed. A thoro spraying of the poultry house, particularly, around the places where the birds roost is the only effective method of controlling them. If this is done early in the season as soon as the weather begins to warm up and is followed with an occasional spraying around the roosts during the spring and summer, the control of mites will be a very small problem, but let them once become established all over the hen house before control is started and it is a difficult job to get rid of them.

Any good stock dip applied with a spray pump will be effective. An economical spray mixture can be made:

- 1/2 pint of stock dip or crude carbolic acid
- 2 quarts of kerosene
- 1 gallon of crude or crank-case oil

Gas distillate, which is a product secured in the manufacture of artificial gas, is an excellent material to use for mite control when it can be secured.

**Fright.**—Birds flying overhead, sudden and strange noises and conditions often will frighten chicks so that they will rush blindly for cover and crowd and pile into corners smothering many chicks if they are not quickly looked after.

**Poisoning.**—Chick losses sometime develop suddenly from no apparent cause. When this condition occurs, one should look immediately for spoiled or decayed food or other materials and steps should be taken immediately to change or correct the conditions.

#### Management of Pullets

**The Age for Pullets to Begin Production.**—Pullets should be given every opportunity to develop without forcing growth, in order that they may have the body vigor to withstand a long and continuous period of heavy egg production. It is not a good practice to force growth by the use of a heavy protein diet over the entire growing period. Birds thus forced will start laying a month or 6 weeks earlier than the normal maturing period for the breed, and will not get the body growth that enables them to stand up under heavy egg production over a long period of time. The normal period of growth before breeds of Leghorn type start laying is from 5 to 6 months when properly managed and fed, and for such breeds as Plymouth Rocks, Rhode Island Reds, etc., it requires from 1 month to 6 weeks longer for their development.



A good plan of management is to hatch early, and start feeding the growing mash as recommended in the feeding schedule on page 2 until the pullets are 3 to 4 months of age, depending upon the rate of maturity for the breed. After this, slower body growth is desirable and can be secured by taking away any milk that is being fed and the meatmeal from the mash, only feeding the following mixture of ground feeds along with an evening feeding of whole grains.

Cornmeal	35 pounds
Ground wheat	50 pounds
Ground barley or oats	10 pounds
Bonemeal	5 pounds

This ration should be continued for 1 to 2 months prior to the time it is desirable to bring the pullets into production. It will enable them to put on body weight and fat and thus they can go into winter production with greater vigor and vitality and give a more stable production during the winter months.

**The Time of Year for Pullets to Begin Laying.**—Pullets should be hatched early enough that they will begin to start production by September. It often requires several weeks of laying before pullet eggs are of marketable size. As the most profitable time for egg production is during the winter months, it is best to start pullets laying early in order to be able to take advantage of the high winter prices.

There is a danger of early hatched birds going into a fall moult, but this is mainly a feeding, management and housing problem and can be controlled by the right practices. One can readily see from the following hatching table that the flock that starts producing early in the fall will be the one to benefit from the higher winter-egg prices.

HATCHING TABLE

Month Hatched	Breeds of Leghorn Type	Plymouth Rocks R. I. Reds, etc.
	Approximate Month first egg will be laid	Approximate Month first egg will be laid
January	June	July
February	July	August
March	August	September
April	September	October
May	October-November*	November-December*
June	November-December	December-January

\*Late-hatched chickens are slower growing and thus require a longer period to reach full growth and start laying.

**Separate Cockerels Early.**—The cockerels should be separated from the pullets when they weigh 1 to 2 pounds and those not needed for breeding stock should be fattened and marketed. The early hatched cockerel marketed when 1½ to 2½ pounds are usually more profitable than when they are kept until 4 or 5 pounds and sold on a late and lower market.

Allowing the cockerels to range with the pullets and stinting of feed will produce pullets that are low in vitality and unable to stand up under heavy production.

#### **Buying Baby Chicks**

The practice of buying baby chicks has been developed so extensively during the past few years that it is a common and practical method of flock replacement on the farms today.

So many inferior and diseased chicks are being marketed that unless one has had previous experience as to where good chicks can be purchased it often is a problem to know where to send to get chicks that are of good quality and free from Bacillary White Diarrhoea.

The County Extension Agent or the Extension Service of the Agricultural College can often advise as to where desirable chicks may be secured.

**Time to Hatch or Buy.**—All things considered, the early hatched chick is by far the most profitable.

February, March, and April are the best months in which to raise Plymouth Rocks, Rhode Island Reds, Wyandottes, or Orpingtons, and April to the middle of May for breeds of the Leghorn type.

Seldom does it pay the average poultry raiser in Colorado to buy or hatch chicks after the middle of May.

**COMPARE THE GROWTH OF YOUR CHICKS WITH THIS  
NORMAL CHICK GROWTH CHART**

Age Weeks	White Leghorns		R. I. Reds	
	Weight Per Week in Lbs.	Lbs. Feed Per Chick Per Week	Weight Per Week in Lbs.	Lbs. Feed Per Chick Per Week
1	.11	.07	.11	.08
2	.18	.15	.16	.16
3	.26	.25	.26	.24
4	.38	.32— .79	.36	.33— .81
5	.50	.41	.54	.44
6	.69	.51	.74	.60
7	.90	.66	.96	.69
8	1.09	.74— 3.11	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— 6.86	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—11.21	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—16.64	3.63	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—22.13	4.30	1.76—25.77

The growth of Plymouth Rocks, Wyandottes, Orpingtons, and breeds of similar size are comparable to the growth of Rhode Island Reds.

Investigations have shown that feeds contain certain substances known as vitamins. The presence or absence of these substances in feeds determines to a great extent the value of the feed relative to its influence on normal health, growth, and development of poultry.

## Sources of Vitamins for Poultry Feeding

	A	B	C
Alfalfa, Clover—Green .....	+++	++	++++
Alfalfa, Clover—Well Cured.....	+++	++	—
Alfalfa, Bleached by Exposure.....	—	?	—
Barley, Oats, Rye, Wheat.....	—	++	—
Beets, Mangels .....	—	—to+	—to+
Cabbage .....	+++	++	+++
Carrots—Yellow .....	++	++	++
Chard .....	+++	++	?
Cod Liver Oil.....	++++	—	—
Condensed Buttermilk .....	+	++	—
Corn Silage .....	++	?	—
Corn, White .....	—	++	—
Corn, Yellow .....	++	++	—
Dried Buttermilk .....	+	++	—
Eggs .....	++	+	?
Egg Yolk .....	++++	++	—
Grasses—Green .....	+++	++	++++
Lettuce .....	++	++	++++
Meat Scraps and Tankage.....	—	—	—
Millet .....	—to++	++	?
Rutabagas .....	?	++	+++
Skimmilk, Buttermilk .....	+	++	+Var.
Soybeans .....	+	++	—
Spinach .....	+++	+++	+++
Sprouted oats .....	+	++	+
Tomatoes—Fresh .....	+++	+++	+++
Wheat Bran .....	—	++	—
Wheat Middlings .....	—	+++	—
Whole Milk .....	+++	++	+Var.
Yeast .....	—	++++	—

— Indicates absent or very small amount.  
 + Present in small amount.  
 ++ Good source.  
 +++ Excellent source.  
 ++++ Very abundant.  
 ? Unknown.  
 Var. Variable.

This table has been compiled from tables found in Henry and Merrison's Feeds and Feeding. (1923 Edition.)

## Vitamin Influences in Poultry Feeding.

Name of Vitamin	A	B	C	D*
Lack of	Retards Growth Lowers Vitality Causes sore eyes Weakens Chick	Upsets Digestion Stops Growth Checks Reproduction Causes Leg Weakness Affect Nervous System	Does not Affect Poultry	Causes Leg Weakness in Young Chickens

\*The source of vitamin D is green leaves, milk, combined minerals, cod liver oil, and the ultra-violet rays in sunlight.