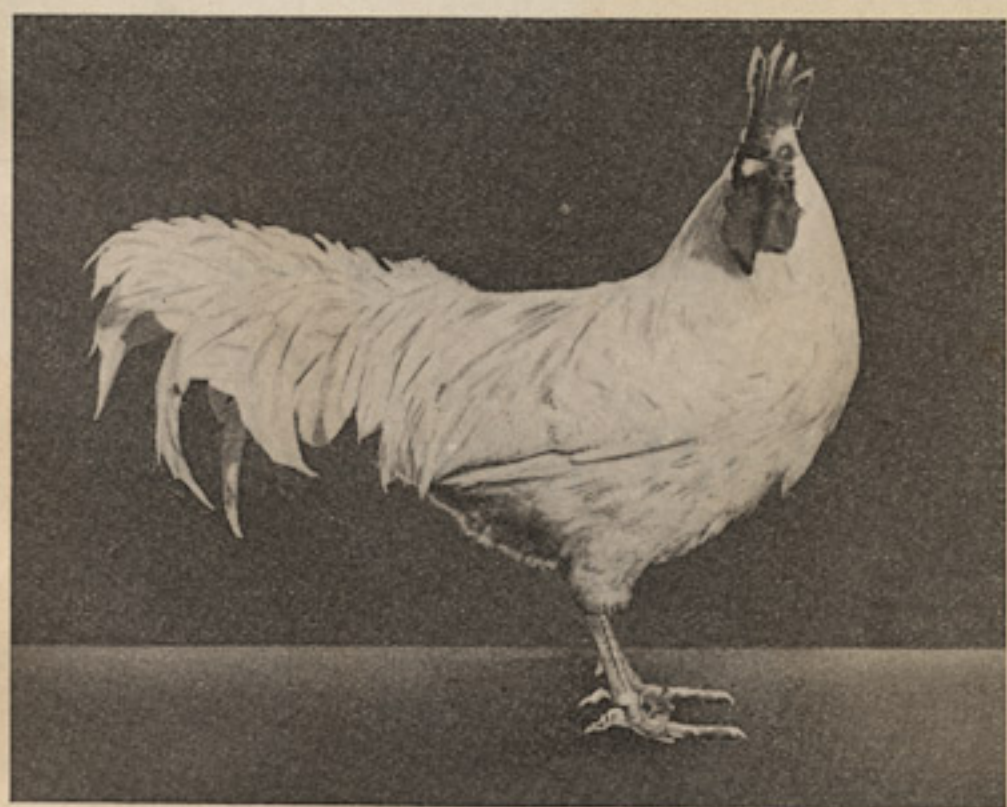


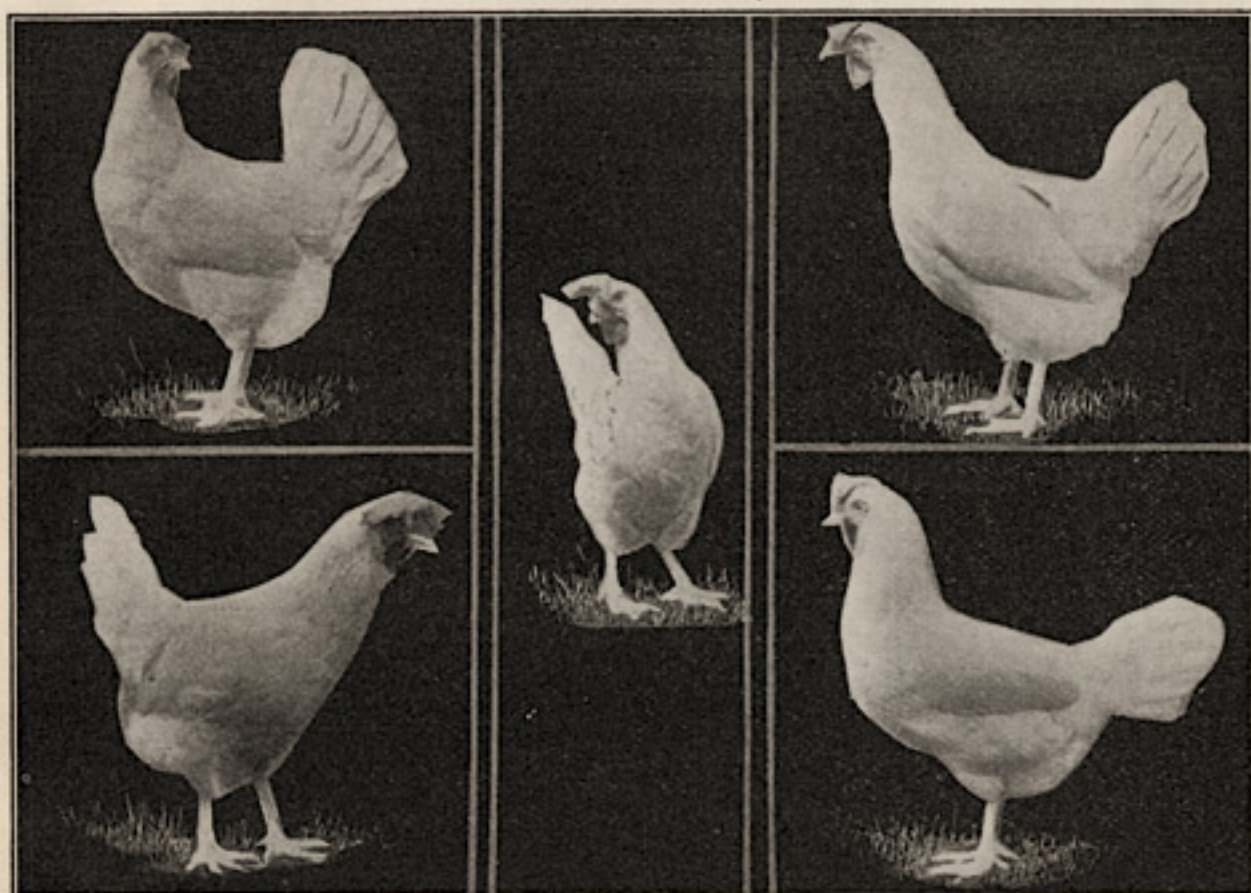
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SUCCESS WITH
POULTRY
IN CALIFORNIA



SOUTHERN
PACIFIC

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Petaluma Prize-winners, Egg Laying Contest in Missouri

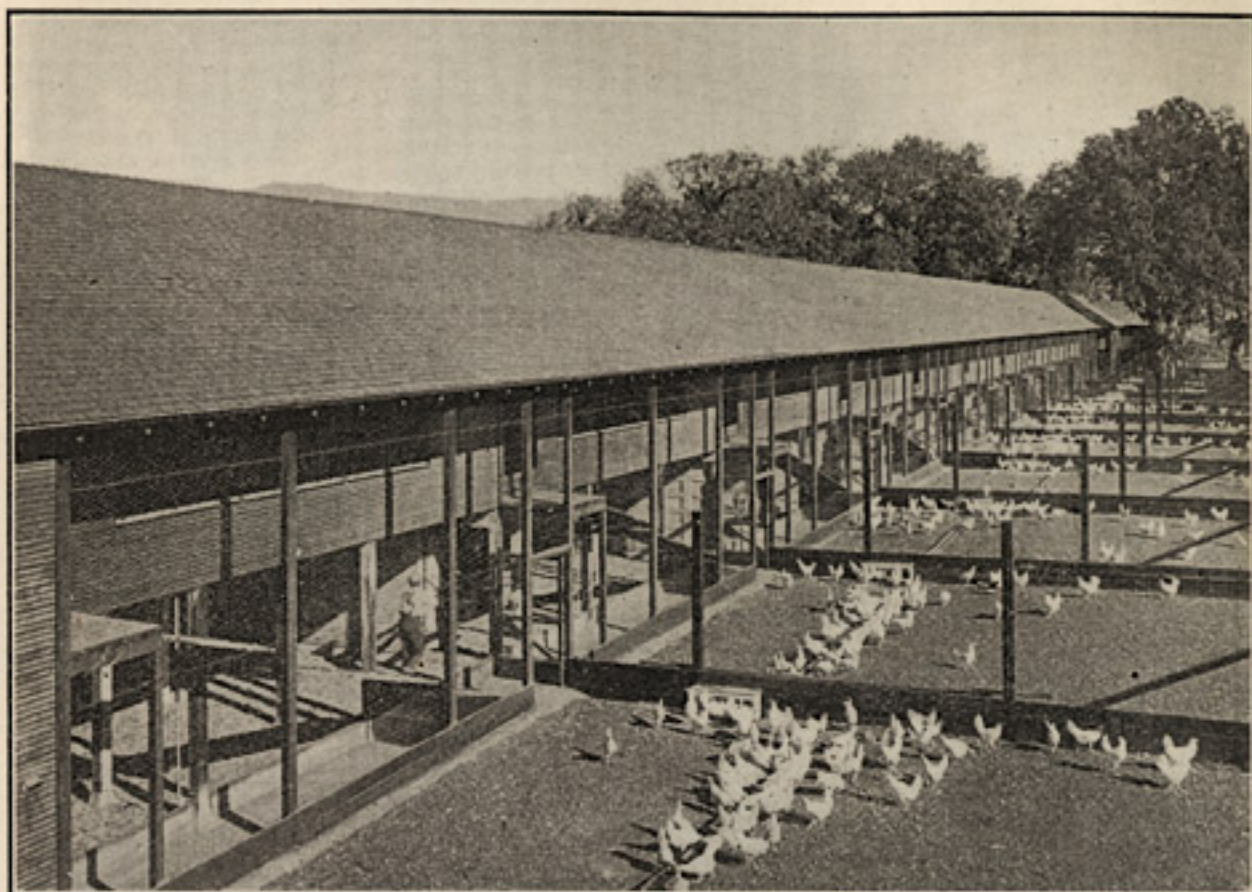
Success with Poultry in California

What Is Aimed At

This publication is not a primer. It is a radical departure from the conventional books of advice about keeping poultry, and seeks to get down to the roots of the industry. It assumes that a knowledge of the fundamental ideas developed by the progress of this industry is the gateway to success, and that to know the reasons and laws which determine the management of fowls under the artificial conditions in which they must be kept for profit, is more important than rules and stereotyped directions. Details of management can be found elsewhere: these pages have to do with the vital principles which underlie successful management.

Little is said about profits in the business, but the *conditions* of profit are strongly emphasized. Any one can keep poultry, but if poultry raising is to *keep the owner* of the flock, he must not only *know how* to manage, but *why* this or that is essential.

No attempts are made to "boost" the industry: the aim is to *make* it profitable.



Laying House, Hopland Stock Farm, Cal.

Want Reasons Rather Than Rules

Rules are for the child; the man asks to know the reason for them; instructions are arbitrary and will not always fit conditions. In the nature of things, we must learn from others, but our real knowledge is the product of experience.

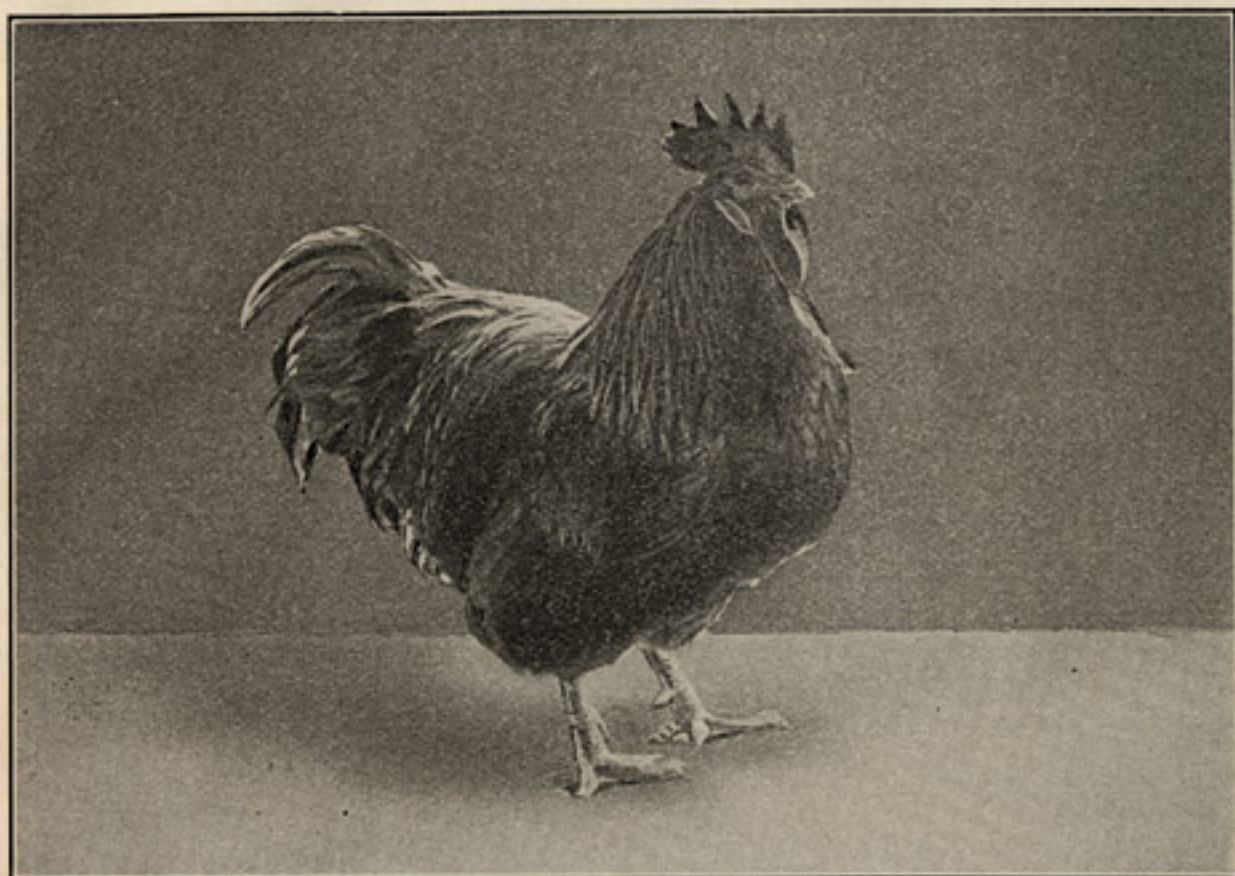
Poultry raising is not a kind of happy-go-lucky venture; it is not a quick and short road to fortune; there is no "knack" of feeding or secret of breeding or management, and blame for failure to make it pay should not be laid upon the seemingly perverse fact that now hens will lay and now they won't.

The hen is not a lawless creature; it is only a question of understanding her—of studying her under confinement and as effected by restraint, by different foods, by changes of temperature, by over-feeding, by crowding and bad air. She is an egg layer; this is her business under the changes effected by domestication and breeding, and success will come from knowing how to treat her, how to house and feed her and how to work with her along the line of her especial and distinguishing function as a nervous, sensitive, highly developed organism for the production of eggs.

The Hen Once Wild and Free

We may not forget this. It is important that we should recall her wild progenitors, the jungle fowl of India, Southern China and the East Indies, and along another line of descent, probably an extinct progenitor of the Aseel or Malay fowl. We must take into account her wild origin; domestication has not deprived her of all her wild traits, but it has changed her from a mere mother hen, intent on raising a brood, to an egg-laying bird, a creature whose chief function is to lay eggs for the people who feed her.

This is not natural—not her primal nature. It is no more natural for the hen to lay eggs for my breakfast or for the market than it is for the crow or the wild duck of the marshes to do so.



Black Orpington Cock

The egg-laying hen is an artificial product. She has been educated out of her maternal instincts, and instead of laying a clutch of eggs and then brooding them, she goes on laying from one hundred to two hundred eggs per year. She lays eggs as a business. We have made her an egg machine.

But she will do her best for us only under the best conditions, and these must respect her wild origin and the necessity of keeping in her the old wild vigor and abounding health of the fowl of the jungle.

This is a chief difficulty, to keep a flock of hens under confinement, and yet maintain in them vigorous health; to so feed them in pens as to approximate natural habits, and have them housed so as to insure fresh air, the maximum of sunshine, and have them clean, free of vermin, active, pre-occupied, contented, busy and singing—to care for them and be necessarily about them, yet respect their privacy—their disposition to lay in secret. These are the supreme difficulties, yet it is from a clear apprehension of conditions growing out of the hen's inherited traits that the egg basket must get filled.

Missing the Point

The beginner is apt to emphasize a single feature or two of the problem. For example, the breed. As egg layers, some breeds are better than others, but, save in a limited degree, success does not depend upon breeds. There are strains of the best breeds, bred especially to lay, but, while more prolific than some other strains, success does not turn about the best strains.

Then we pin our faith to a method or system of feeding, and find in turn that while some ways of feeding are better than others, giving better results, satisfaction does not come from the best methods of feeding.

So in turn we try this system or that of housing or of colonizing, only to discover that there is no one secret of success in this business.



Spring Valley Poultry Farm, Rocklin, Cal.

The fact is that the business of poultry keeping for egg production is a *whole*, made up of *parts*. It is a *unity*; it hangs together; *all* features of it are important; all parts must receive attention and the price of success is the ability to look after a multitude of details.

There is profit in poultry, but the conditions must be met. The modern, improved, up-to-date hen will lay eggs for you to the point of profit, but *upon her own terms*.

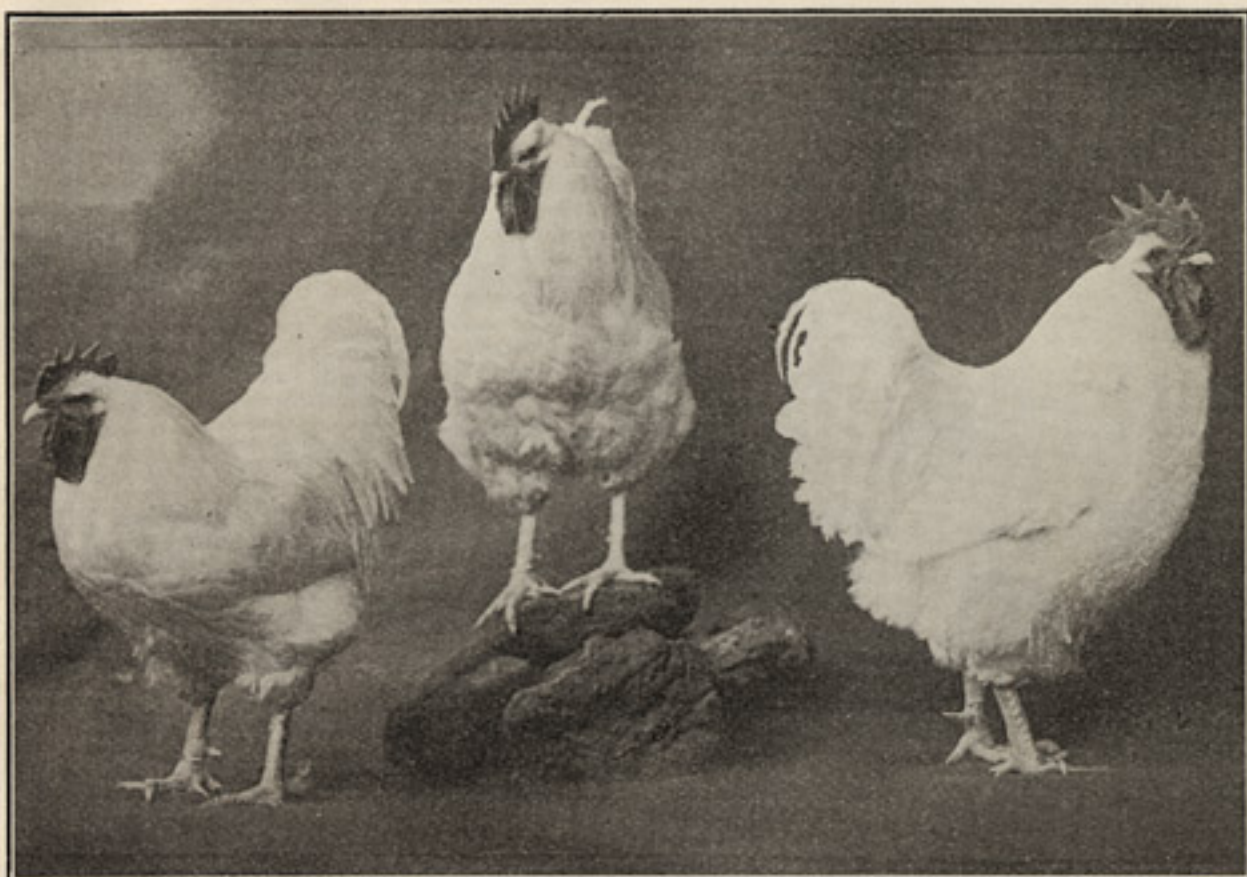
What these terms are we may hope to indicate as we go on.

But before we do this, we must guard against too great expectations from local conditions, and at the same time emphasize the great opportunity which California conditions offer the grower.

Climate Not Sufficient

No better climatic conditions can be found than some parts of California offer, and the State as a whole is wonderfully adapted to promote the health and vigor of fowls. But California does not produce enough poultry and eggs to supply her own tables. Not only is this significant, but California can show as many abandoned poultry farms as other States in the Union. Why is this? A larger proportion of people here have tried to get a living by keeping poultry without knowing how or taking time to learn. They were here for the sake of the climate, to recoup health, and the poultry ranch was a make-shift. They trusted in the climate to do two things—make them well, and make hens lay. They confided in mild air and sunshine, profited by it physically, but neglected the business side of the henery. The flock grew idle or sickness invaded it, and the effort to meet expenses by renting a poultry farm failed.

This goes far to explain the chronic shortage of eggs and poultry in a State that ought to export both. A full explanation would run back into agricultural



White Orpington Type

conditions in California, but it is enough to point to the fact that climate alone cannot be depended on to make poultry keeping easy or profitable.

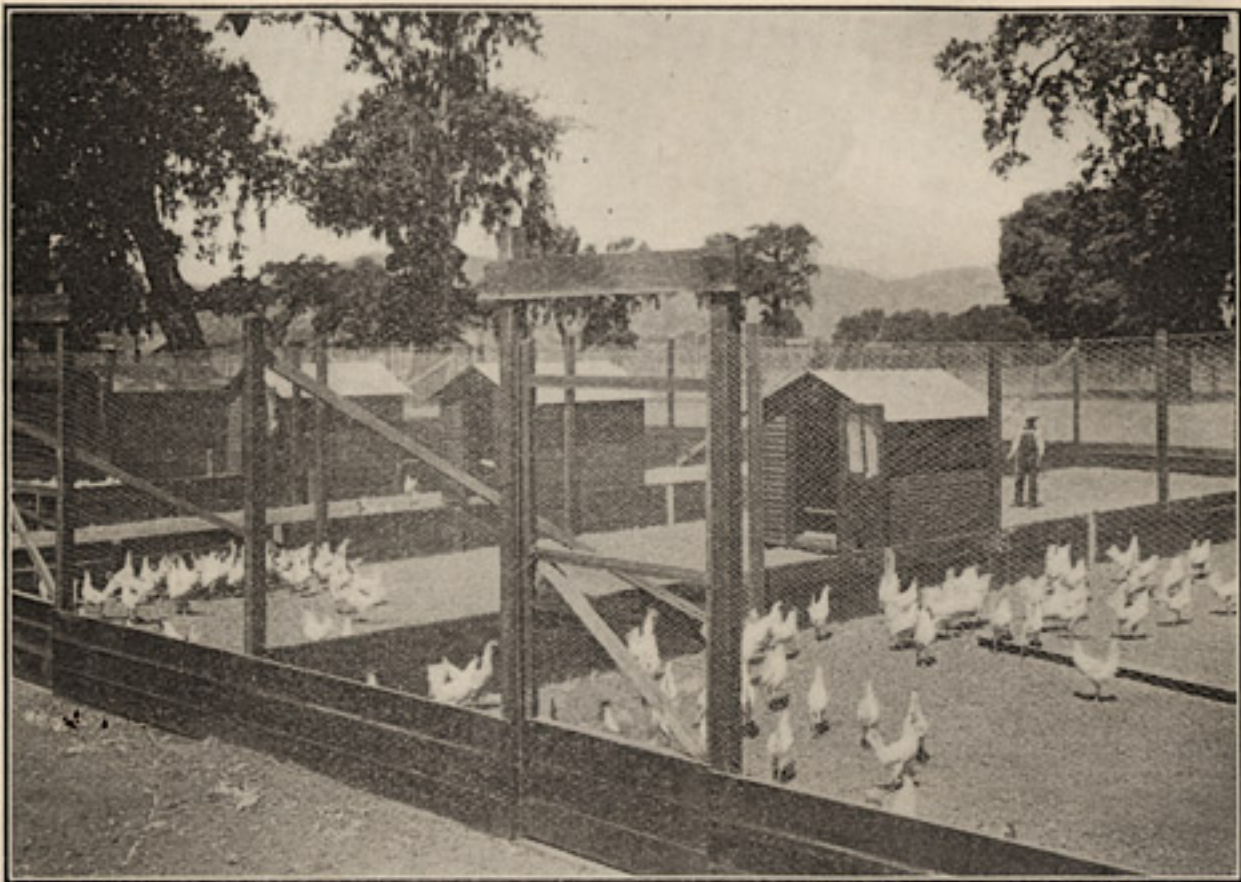
The climate is relatively more favorable for the winter production of eggs than in the colder States, but winter eggs come high in California. Poultry keepers find that winter egg production is a problem here as elsewhere, and that hens get cold, and want shelter and sunshine and protection from chilling winds, and that getting eggs here as elsewhere is a matter of constant attention to details, and not of dependence upon climate.

The General Situation

It differs in California in important particulars from other sections of the country at large, and these differences make the California opportunity.

Two features are here: numerous large poultry farms and a home market. In the Middle West the bulk of the eggs comes from the flocks of the farmers, and is largely exported. California imports both eggs and poultry. There has been a large increase in production during the last five or six years, yet the importations from Missouri River points show yearly several million dozen eggs, and several hundred cars of live and frozen fowls.

The prices here are usually a little higher than in the Eastern States for both eggs and poultry, and the situation indicates the possibility of large development within the demands of the home market. There is room for more poultry farms; the market is still unsupplied by home products, and the man or woman who will not neglect the details of the business in reliance upon the California climate, can build up a steadily profitable industry. There is no reason why the consumer should eat long-refrigerated fowls for the Sunday dinner or eggs from Kansas or Nebraska that may not have been strictly fresh when they started across the continent.



Yards at Hopland Stock Farm, California

California's Advantages

These are both direct and incidental. The one is the natural advantage of green food all the year. The other, the indirect gain of slight cost in housing fowls. The flock may be out of doors at all seasons save in time of actual rainfall. The "green winter" rarely reaches freezing weather and fowls may have an abundance of grass pasture or of tender oats or barley sown for repeated cuttings. Alfalfa is one of the best of "egg foods" and should of course have a corner of the "chicken ranch." It is not simply a filler—giving bulk—but an egg producer. The winter season generally need not add to the expense of maintaining the flock.

Location

There is a chicken belt in California, but it is not well defined and the phrase is seldom heard.

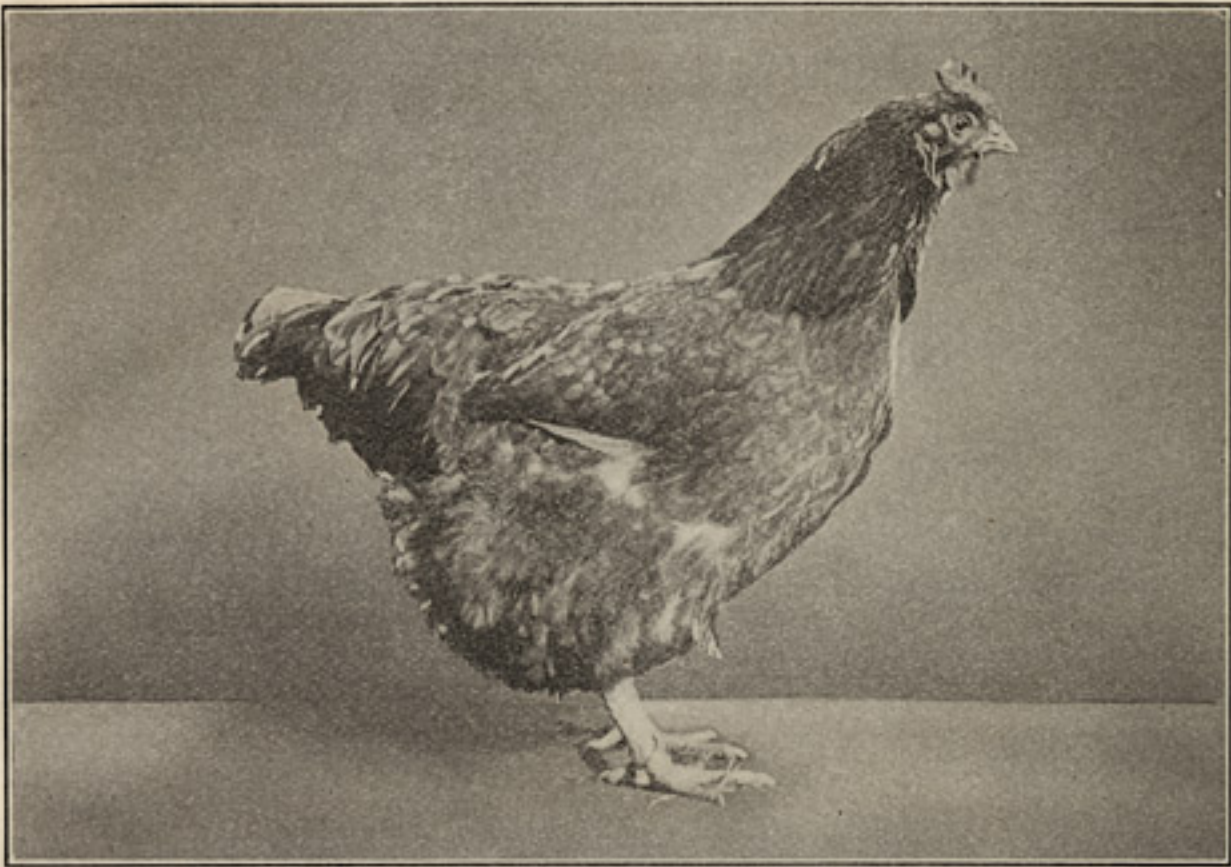
The term relates in a general way to the coast country, partly because this offers at once the chief market centers, cool summers and relatively little difference between summer and winter temperatures.

The little city of Petaluma is "famous" as the "City of a Million Hens," and this is only about thirty miles from San Francisco and within the zone of high fog and sea-breezes. But the whole coast region for twenty to forty miles inland is very desirable for this industry, and many parts of the interior show good results wherever plenty of shade and fresh water is provided.

This should be counted on here—the helpfulness of the climate. It is one of the assets of the poultry man.

Climate and Health

A full egg basket is insured only by healthy fowls, and health comes from fresh air, exercise in the open and plenty of green feed. More freely than where closely housed because of inclement weather or zero temperature, large numbers of



Rhode Island Red Hen, California

fowls may be allowed to roam together, or be yarded in perfect health without fear of disease. In many parts of the world this would mean disaster.

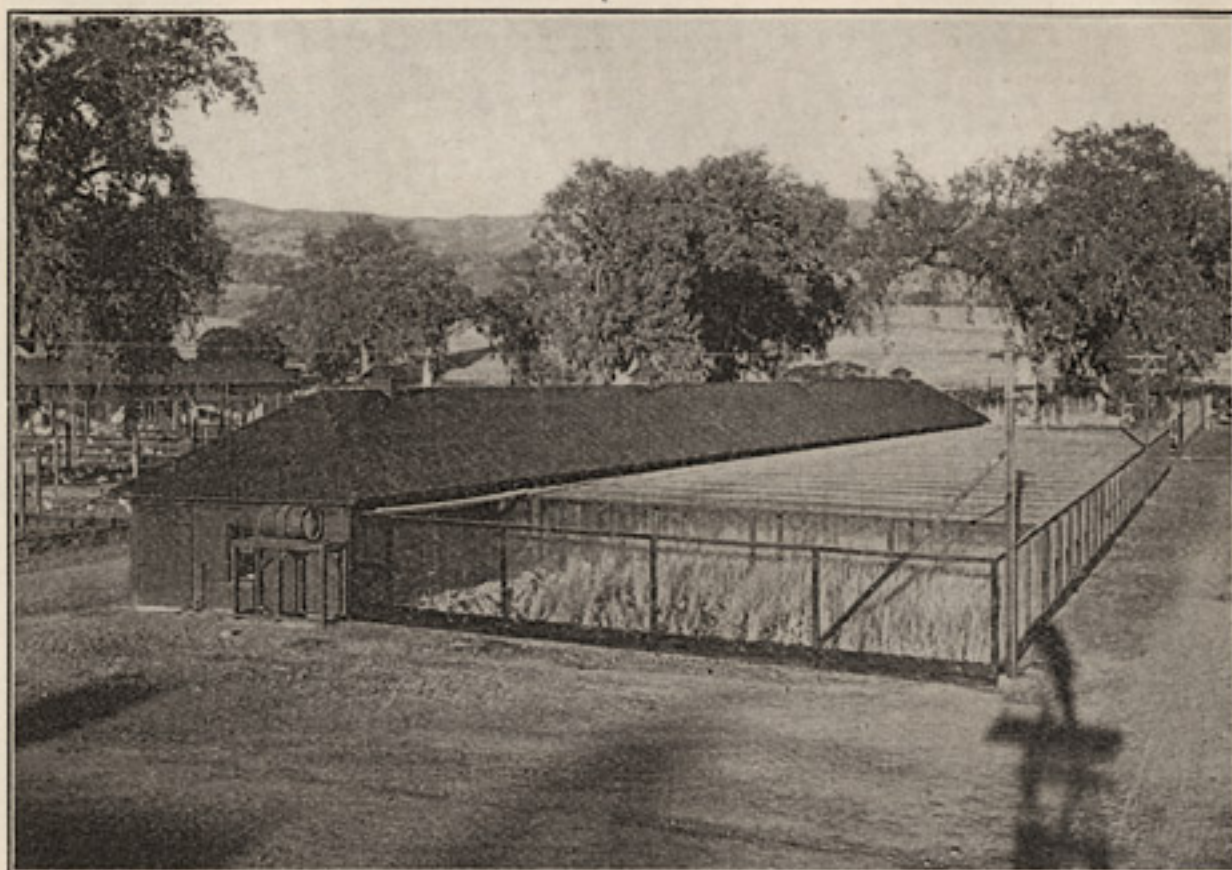
If it be thought that parasites abound in such a climate, it is true but not markedly so. That is to say, it does not require more effort to keep lice and mites in check here than elsewhere. No poultry man depends on cold weather to rid his roosts of vermin. Insect pests must be fought everywhere, and cleanliness will banish parasites as readily in California as in the colder States.

Growing Poultry Food

Domestic poultry are not only omnivorous but voracious. They not only eat freely and naturally of grains, grass, green forage of various kinds and meat foods, but in health seem always ready to eat. They are primarily grain eaters, but insects of many kinds and raw or cooked vegetables, grass and green stuff in great variety enter into their dietary. The quantity consumed daily is so considerable that the question of food supplies is always a serious one.

A first conclusion should be not to keep a boarding-house for hens where everything is bought, but a farm home, where much of the food is produced. It is economy to feed the flock at first hand. Have something always coming on for the birds that are laying eggs, and are always wanting material out of which to construct them.

Why should the poultry man buy all his supplies any more than the grower of swine or any other live stock? If the flock is kept on a city lot, part of the area may profitably furnish green feed. A poultry farm where no poultry food is grown is a misnomer. "Before you have a single chicken on that dream ranch," one California grower well says, "be sure to have the green feed well along," and as a means of securing the continuous growth of supplies a primal need here is water; green feed for poultry in California means water for irrigation.



Brooder House at Hopland Stock Farm, California

Value of Green Feed

It is *essential to the health of fowls*, and if grown on the premises materially reduces the food bill. But its value in egg production is beyond debate. One of the *open secrets* of successful poultry raising for eggs is *plenty of green feed*.

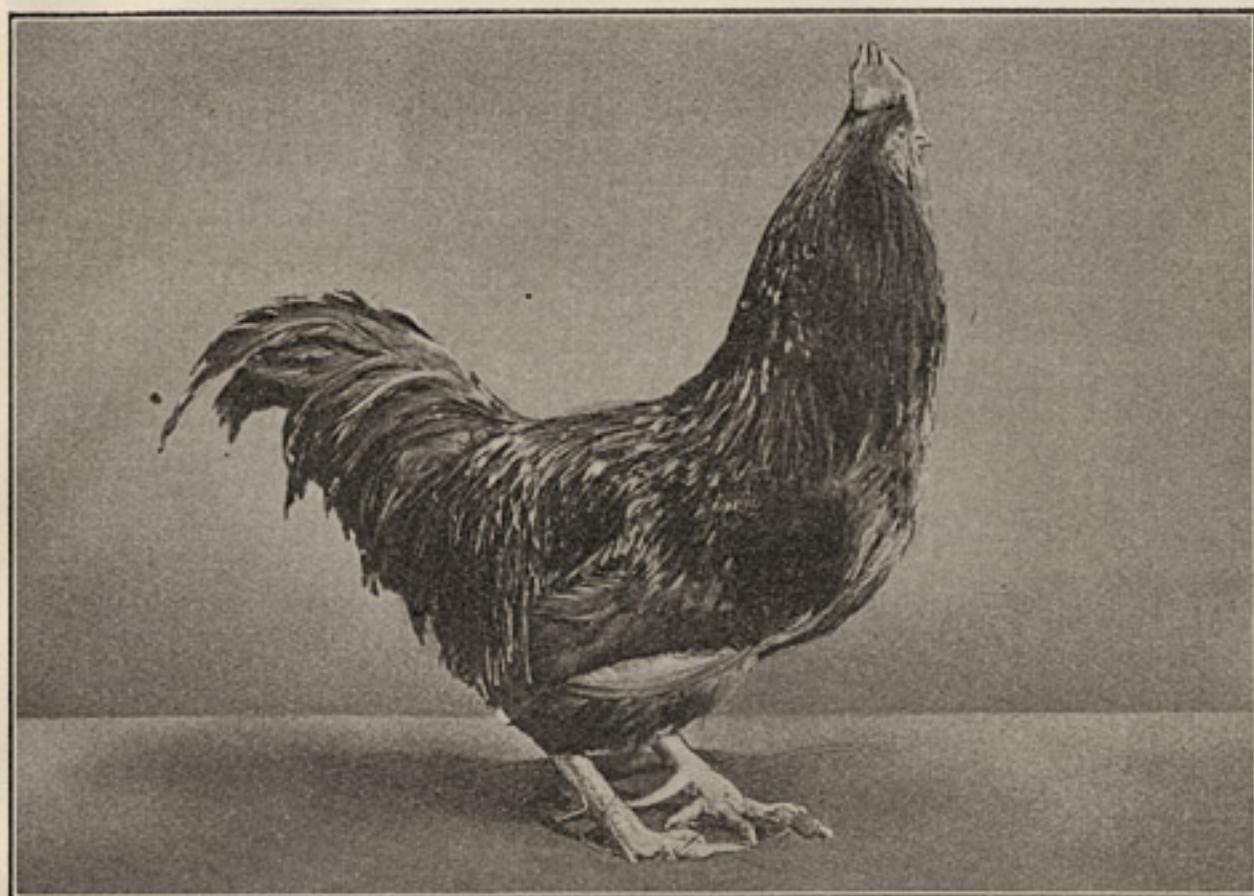
It adds to the vigor and health of the flock by supplying variety and bulk, and where regularly provided, keeps laying hens from eating too much concentrated food, which tends to cause over-fatness. It is one of the troubles of the poultry grower—over feeding by the use of finely ground rations. This is prevented by the use of green forage, and in this climate it is easy to provide successive crops of oats, wheat or barley for cutting, while an alfalfa patch for feed according to the size of the farm or the flock is at once health and money in the purse. There is no better egg food.

In addition, kale, beets, spinach, rape, lettuce, cabbage, can be readily grown. Mangels can be cooked and fed with the mash or split open and fed raw. Beets and spinach can be planted in August, cut and fed in October, and cut again in November in many parts of the State.

The possibility of providing green feed all the year at slight cost will be appreciated by every one who knows its value in egg production.

Planning the Business

Poultry raising is not simply "keeping a few hens." It is a business and must be planned for, and the chief features of it decided upon in advance. A general or special type of the business must be chosen and a "plant" of more or less completeness and capacity sketched out.



Rhode Island Red Cock

What Breed

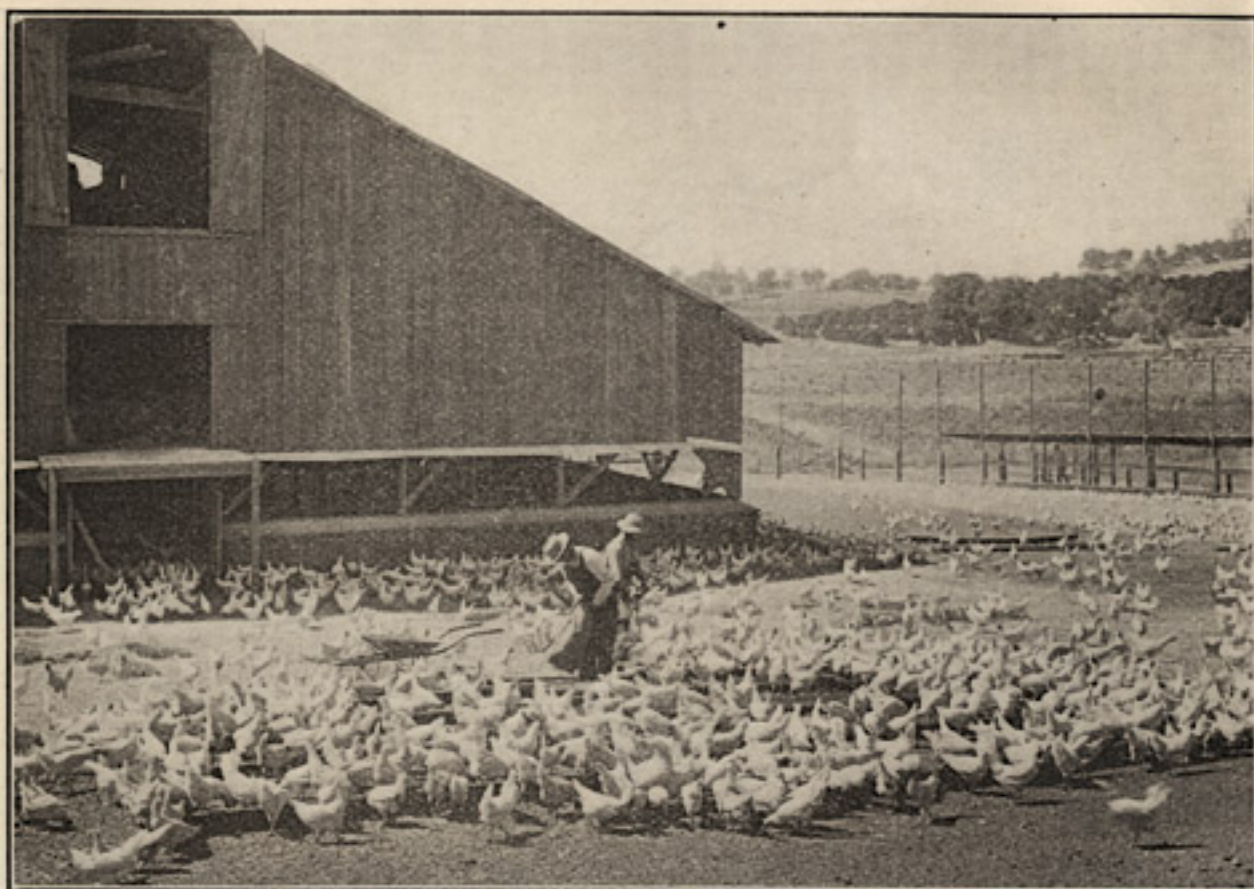
We do not venture to decide. We assume that the poultry farm is to be run primarily as an egg farm. If so, the choice will lie between five or six standard breeds, and will be decided along the line of personal preference as determined by looks, by sentiment, by association, or by local reputation. No matter; if the choice falls upon one of the great egg breeds, it should include the best of the breed chosen; not simply an egg-laying strain, bred for egg production, but a vigorous strain, robust, alive with health.

We speak of one breed, because it simplifies work to keep a single type of fowl, and insures eggs uniform in size, color and shape, and this is of consequence in the market.

Let us emphasize the importance of starting with the best of a good breed. The success of the farm does not hinge upon the breed, unless the choice falls outside a few well-known types. But the best of any particular class of egg layers is not too good, and the best means not merely that the birds have been bred for laying, but that the breeder has kept in view the best possible constitution. Pure-blooded stock must be vigorous stock, strongly built, hardy, meant for business. The practical grower does not want utility sacrificed for show.

What System

There are chiefly two in California: the colony plan and the intensive system or method. In the first, a large number of fowls run together; in the second, the fowls are separated into small flocks each having a separate house and yard. It matters little which system is adopted. It is the working of the particular plan that counts—attention to its minutest details, the application of business principles, providing for absolute cleanliness of houses and yards for the comfort of the flock, for pure air by night and exercise by day. This and not the system



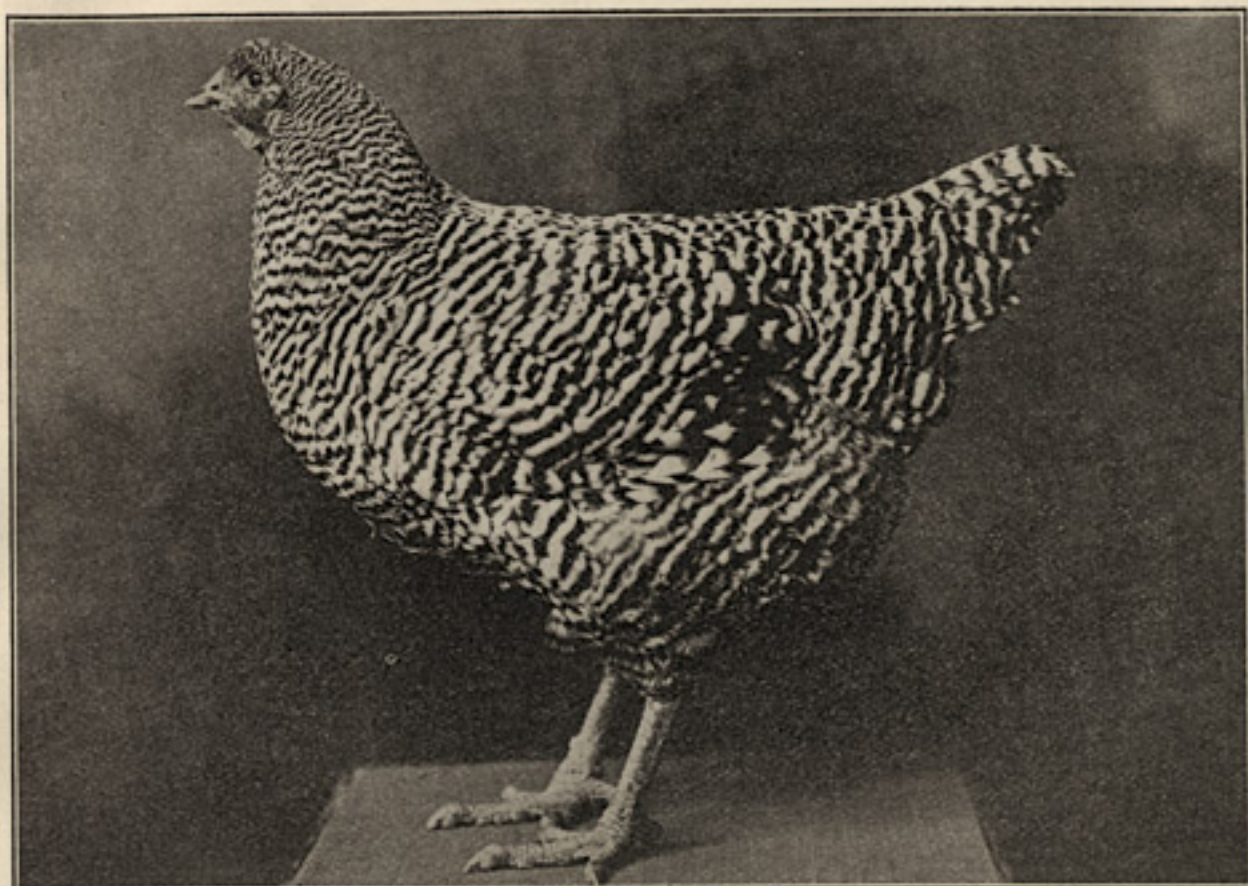
Feeding-Time on a Poultry Farm

chosen is the key to success. The crux of the whole matter is not in a particular breed or a particular system of handling the flock, and we say again that it is not the yard plan or the colony plan that is important, but the working of the plan. The poultry man's chief trouble is quite independent of the system he uses and his success will not depend upon it. Whether he has an acre of ground or twenty or forty acres, whether he has yards or colonies, his success or failure will turn upon other features of his management.

Yet there is probably a best way at this point. The yard system has certain advantages not to be overlooked. Thus, different ages are kept apart; the old can be disposed of, trap nests can be used more effectively and disease can be controlled or prevented from spreading. Separate rooms may be as desirable as separate houses, and a long house divided into compartments and provided with an alleyway, enables one person to care for more fowls, or for the same number with less labor, and with more comfort in rainy weather. The yards may be on two sides of the house, and used alternately, turning over and cleansing the empty yard. Plans can be obtained or made; these will incorporate all modern improvements and such use can be made of open fronts, windows and skylights as will insure the maximum of fresh air and sunshine.

Fowls and Fresh Air

Is the sleeping perch a good thing for humans? It may be equally good for hens. The problem is how to shelter the flock, provide pure air and avoid draughts. The *hen herself imposes certain conditions*. She takes cold as readily as the denizens of a boarding-house, or the members of a furnace heated home. She sneezes, has watery eyes, a running nose, and a swollen face. The cause? Close and crowded quarters at night, want of fresh air, draughts from knot-holes or cracks. Study the instinct of the fowl. She roosts contentedly in the open; she is not afraid of cold, but dislikes wind, rain and snow. She wants shelter rather than warmth.



Barred Plymouth Rock Pullet

Note, too, that out-door fowls have good health; they seldom have colds, they lay well except in severe weathers. If, then, hens are vigorous and productive without houses, what is the chief function of the hen house? To provide shelter rather than warmth; to protect them from storms and from cold winds, yet insuring a supply of out-door air.

More Fresh Air

It is claimed that chickens require a great deal more fresh air than cattle or horses in proportion to their size. An authority says that the amount of air breathed by the hen is three times greater than is required by men or cows per 1,000 pounds of live weight. If true, this is a pointer of great value. Give the poultry house perfect ventilation without draughts, plenty of oxygen, but no cracks for the wind to enter.

In some experiments at the Utah Station, a little artificial heat increased the egg yield, but at the expense of vigor, for the fowls in the cold house weighed heavier than those in the warm house. This does not mean that warmth is injurious. Fowls are vigorous in the long California summers, and are at their best in cold countries when the warm spring days come. But it does mean that warmth without fresh air affects health and vigor and this should be a sufficient guide in the construction of a poultry house. It must suit the conditions of the climate, and it must be healthful, convenient, comfortable and as cheerful as exposure in the sun and air can make it.

Sunshine in the House

In cities we struggle to secure sunny rooms, and corners providing the most sun in the living rooms and the chambers are at a premium. Sun is not less important in the poultry house. Why cut off the rays of the sun by refraction



One Shipment, 5,000 Fowls, Petaluma, Cal.

when the direct rays may be transmitted or absorbed by windows and roof, especially during the dark, cold or damp months of the year. The practical, twentieth-century house has its roof and windows set to catch the direct light and heat rays of the sun. Heat comes when heat is needed. Light is had when the days are all too short for the full capacity of the great egg-producing machines. Sunshine is the universal antiseptic: give it to the hens.

The Dust Bath

No watchfulness can wholly keep a flock free from vermin. Given access to a dust box, the hen will use it to free herself from devitalizing and annoying parasites which come unseen. In her free state she finds a dust hole in the road and uses it as if she enjoyed it. Provide it for her in confinement. But observe—the entire flock cannot take a dust bath in one small box and they are usually ready for this natural and instinctive function at the same hours of the day. Give them part of the scratching shed for a dust room or make provision for this exercise in a sunny part of the yard. It is essential to the well-being of the flock.

Space Per Fowl

There is a tendency to restrict floor space and this goes with a disposition to keep larger flocks. This in turn means better management. A generation ago we did not know enough about the hen to manage her in large flocks. It is still true that the smaller the flock the greater the production of eggs per fowl, while danger of disease is less. How to determine the size of the flock that will give us the most eggs with the least labor and risk, no one has yet found out. We know, however, that it is wise not to crowd the flock at night in the pens, in the scratching shed or in the brooders.



The Light Brahma Type

How Many Acres

The capital available and the ambition or purpose of the grower will determine this. We have seen 250 hens kept on half an acre; 2,000 have been kept successfully on four acres. It is all a question of management. But extra care is required to keep say 500 hens on an acre, or 2,000 on four acres, and this must be reckoned with. Extra labor or additional help may be required and the area limited upon which feed may be grown. To keep 500 hens on five acres, raise the green feed necessary and gradually increase the flock as ability to manage is developed, would seem to be wise.

The chief danger in crowding is from contaminated soil. The preventative is the spade and the plow, the shifting of flocks or pens to new locations and the exposure of tainted grounds to the sun and air. Healthy fowls cannot be grown on sick soil.

Prevention of Disease

It is one thing to cure disease; it is a better thing to prevent it, and this is as true in the poultry yard as in the household. The one word under this head that needs to be burned in is *cleanliness*. It cannot be made too emphatic. *More failures come from filth* in this business than from any other single cause. Every poultry man and every would-be grower of poultry should read the paper by Dr. George B. Morse in the Year Book of the Department of Agriculture for 1911. Dr. Morse writes as a bacteriologist and from this view-point he says that cleanliness is the *corner-stone* of health and the keystone in the art of healing, and he urges clean yards and houses, clean perches, clean soil, feeding troughs, food, drink, air, eggs, incubators, brooders—everything. The only modification of his statement that we would urge is his advice to “clean out” the flock periodically by the use of epsom salts. This should be omitted. Physic should be tabooed



Laying House

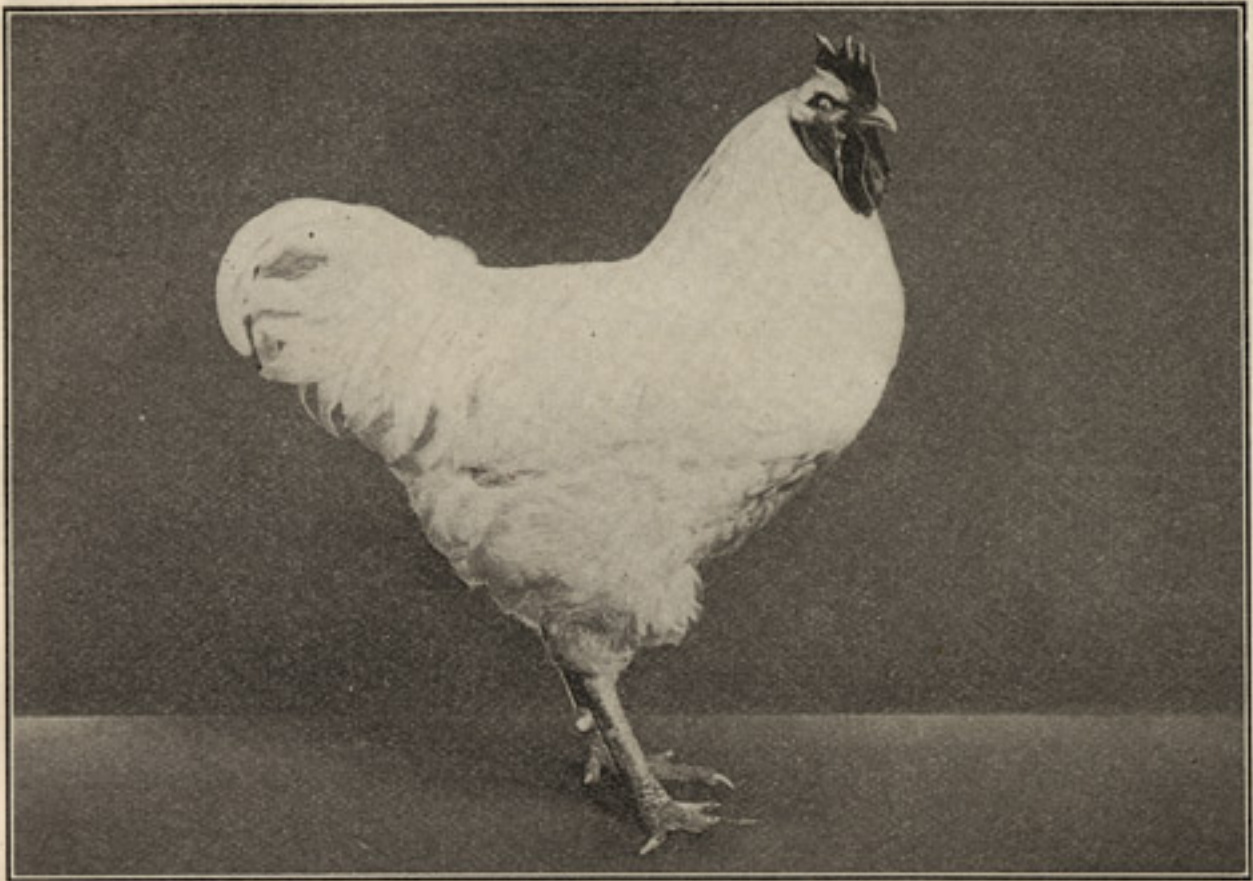
in the poultry yard as in the well regulated household. "Throw physic to the dogs." But "clean up" regularly, systematically, effectually, and do it over and over incessantly and persistently, always at it, picking up, sweeping up, raking up, hoeing up, washing up, whitewashing and spraying, and using betimes hot, water and old-fashioned kitchen soap. The *habit* of cleanliness goes a long way on the road to success.

Is this advice superfluous? The average beginner says: "Of course, I know enough about poultry to know that everything must be kept clean," yet things that look clean may not be clean to the eye armed with a microscope, or to the man trained in the science of bacteriology. In the modern world disease is studied with a microscope, and it is the microscopic dirt that the poultry man must keep out. How many would not scruple to toss a bit of moldy bread to his fowls, give them scraps of meat that "only smell bad," or provide moldy straw for litter in the scratching shed? "Good enough for the chickens," it is thought, if thought of at all, yet out of such practices come diseases—diarrhoea akin to ptomaine poisoning, mycotic enteritis, a disease, Dr. Morse says, of the intestinal tract, and mycotic pneumonia, an affection of the bronchial tubes produced by moldy straw or chaff.

The poultry man cannot equip himself with all the knowledge of a bacteriologist, but he must be quick to appreciate the value of such knowledge and apply it. Complete sanitation everywhere about poultry houses and grounds is absolutely essential. The first thing in this business is the health of the fowls, and here cleanliness is a first law. Failure often comes from dirt.

Chick Feeding and Care

The first lessons in cleanliness will be in the nursery. Before buying, or hatching 500 or 1,000 chicks, the alphabet of feeding, warmth and cleanliness, should be mastered. The hover is the sleeping quarters of the chicks and rest



White Plymouth Rock

and sleep are important to these feathered babies, and should be in a warm air, yet not "close," a place comfortable, well ventilated and free from draughts. Thousands of chicks die from bowel troubles caused by cold, by improper feeding and neglected sanitation. The best brooders, the best food, the right temperatures can be learned from books or poultry men of experience, but the care and watchfulness must be personal. Musty or sour food, wet mixtures allowed to ferment, moist crumbly food, given generously, so that chicks over-eat—the carelessness that permits leavings in uncleaned dishes or in unscrapped feeding troughs—the use of milk, sweet or sour, or both alternately or indifferently, as one or the other happens to be on hand, these explain the mysterious bowel disorders which follow quickly and fatally.

It is believed that half the mortality among young chicks is from these two causes—improper feeding and uncleanness, and over-heating or chilling in brooder or hover.

Exercise is important, and very early they will benefit by searching for their food in finely cut litters. This is strongly recommended by experienced growers. Commercial chick feed is the result of years of testing and endeavors to find the best form and combination. One successful grower plows and sows a bit of ground to oats while waiting for eggs to hatch, and by the time chicks come from the brooders the green stuff is ready and they are allowed to feed at will. They begin to stock up at once, and the practice is continued year by year.

Feeding for Eggs

What to feed, how much to feed and when to feed must be learned from experts and from actual practice. Feeding is both a science and an art—a science in knowing why, and an art in having the skill to do. It is sometimes thought to be a "knack," an undefinable instinct, feeling or conviction, that enables one to



A Foothill Poultry Farm, California

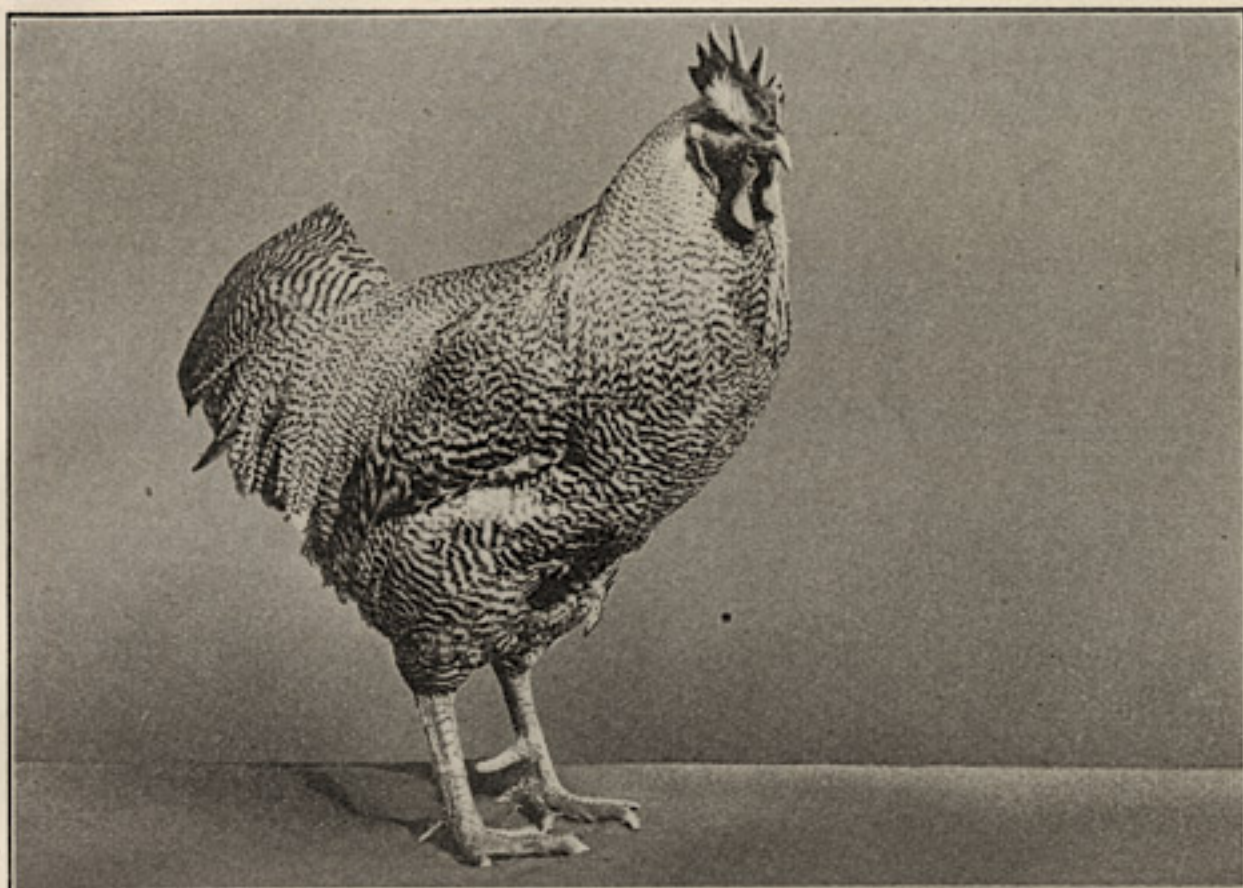
feed wisely, while another comes short or over-does it. It is not possible to make definite rules for various breeds, for differing climates, and for varying conditions of the flock, and it is not easy to decide how much to feed, and to so balance the rations as to produce vigor, maintain health, avoid fatness and insure egg production.

Feeding and Exercise

Feeding alone is only part of the problem of egg production. The healthy man is not made by feeding only, nor the laying hen. Exercise is an important factor and closely related to the egg basket. The busy hen is the laying hen. She keeps her crop partially filled, instead of stuffing it periodically, and gets her exercise as nature provided, while scratching for her food. She takes hours in feeding, and is busy and contented. The vigorous young fowl *must* lay if well bred and given plenty of exercise in finding the grains hidden in deep litter. The scratching shed with straw or chaff in it is not a fad, but a sensible device with its basis in the nature of things. Work it; work it persistently.

In France they found that the dark or red meat in fowls was the product of muscular activity. There is less hemoglobin, or fewer red blood corpuscles in the white meat along the breast bone, because it is placed where exercise cannot affect it. These French investigators found also that exercise affects the fertility of the egg. In close confinement there was a larger per cent of infertile eggs, owing to lack of virility in the fowl—a falling off of vigor.

Feeding, we repeat, should go with exercise. It should necessitate exercise. This is the reason for the scratching shed and the deep litter which compels search for the grain. Provide it, by all means; do not think it unimportant; renew it and keep it supplied with cut straw, chaff and litter from the barn. Keep the litter dry; shake it up frequently; see that it is not musty. The use of it by the fowls will promote digestion, maintain health and tend to secure a continuous



Barred Plymouth Rock

egg-yield. For the nervous, alert, finely organized hen, exercise and plenty of it is essential to vigor and health.

Good Sense and Feeding

Study the food formulas offered by dealers in poultry foods, but do not stay closely by them at all times. Feeding standards worked out in various sections of the country at large will be modified by conditions in California. They are guides only in forming a judgment of what your own flock requires.

Scientists say that food materials should be fed in about the proportion of one pound of protein to four and six-tenths pounds of carbo-hydrates, or one pound to five as some say. Now one need not learn the language of the expert, but we should know what he means and be able to translate it into such concrete terms as grain, ground bone, meat or meat meal and grass, alfalfa, spinach, lettuce, etc.

Protein is the essential principle of food, and carbo-hydrates the sources of heat and energy. The one supplies bone, muscle, blood, feathers, eggs; the other, the starches principally, constitute the bulk of dry matter in almost all foods. And a balanced ration is thought to be about one part protein to five parts carbo-hydrates.

The problem is how to divide these two classes of foods. You must use your judgment and learn by doing it. Skill comes through practice.

Observe that the hen likes certain kinds of food better than others. She likes wheat better than rye, though the two grains are almost identical in composition. Wheat is better for the hen than rye, as tests show. The hen's appetite is worth consulting.

A Variety of Grains Best

The hen likes variety; give her a chance to balance her own ration. A variety will prevent her from eating too much grain, for instance, which might



Poultry Farm in California Foothills

cause over-fatness. But give her also a variety of grains. Rolled barley, for instance, is as good as wheat.

Bulk is necessary in her diet, and wheat, bran, clover, alfalfa, or alfalfa meal, must balance ground grains, wheat middlings, corn meal, oil cake and the like. Too much indigestible fibre must not go with her ration. It is suggested that when hens are laying heavily one-third of the ration should be ground grain. Biddy will not be able to lay eggs and grind her own grain too steadily. Help her by foods which supply readily available nourishment.

Meat Scraps in the Ration

This is an important part of the dietary, but is an expensive and troublesome item that is apt to be dodged. Dried milk may be substituted. Experts think very highly of skim milk, and milk curdled, put in a gunny sack and hung up to drain and fed as a kind of cottage cheese or "smearcase" is very excellent and equal in protein to fresh meat. It is, however, only about one-third as rich in protein as beef scraps. Milk itself is good but contains only about three and one-half per cent of protein, while meat scraps have from fifty to sixty per cent. But neither milk nor meat scraps, meat meal nor ground bone can be provided without some trouble and seldom without considerable cost, and this the grower will often seek to avoid.

But the diet of the free hen includes insects, bugs, worms, grasshoppers, young mice, when they can be captured, and these elements in her dietary the hen in confinement wants. Their equivalent in some form she must have, if she is to lay eggs freely and steadily.

The necessity of animal matter for poultry has been fully demonstrated. It relates to the health of fowls and the more rapid growth of chicks as well as the egg production; experiments a dozen years ago conducted very carefully showed that in the case of young chicks "the gain in weight was more rapid, maturity was reached earlier, less food was required for each pound of gain, and the cost



Prize Black Minorca Cockerel, Petaluma, Cal.

of gain was less." This fact will more than balance the cost of meat meal or milk in the food bill. Experts say that "a pound of protein in the form of meat appears to be more valuable than a pound of protein in any other class of foods," and they think that skimmed milk at fifteen to twenty cents per 100 pounds is "probably the most desirable of all meat foods." But it should be remembered that it takes about six pounds of skim milk to equal in protein value one pound of fresh lean meat.

It is suggested that ten to fifteen per cent of the food dealt out each day should be meat in some form. The main dependence will be beef scraps because they keep well and have a large percentage of protein.

Green cut bone is desirable for variety and a little, say one-fourth of an ounce per day, may be allowed each hen in addition to other meat foods.

Help the Layers

Experiments at Cornell University have given us a pointer in respect to grits. Grit is shown to have a two-fold function: it not only constitutes the mill in the gizzard, or the burr stones of the mill grinding the food so that it may be assimilated, but it also supplies lime in available form. The point to be noted is that most of the grits on the market do not contain lime or have it in very limited proportion. Hens will get grit to grind with and lime with which to make shells on a free range, but both must be provided in yards. Lime must be in a form which the fowl will use: as a free ranger she gets it from the hard shell of bugs or the horny legs of grasshoppers; in the yard, crushed oyster shells, soft clam shells and mortar serve for lime, but clean sharp grit is indispensable.

This is but the alphabet of the hennery. But it is well to know the A B C of the business.

Separate the Layers

This too is alphabetic, but it is one of the letters that help to spell success in the poultry yard. You are after eggs for the general market and are not concerned about their fertility. They will "keep" better if they are sterile or germless.



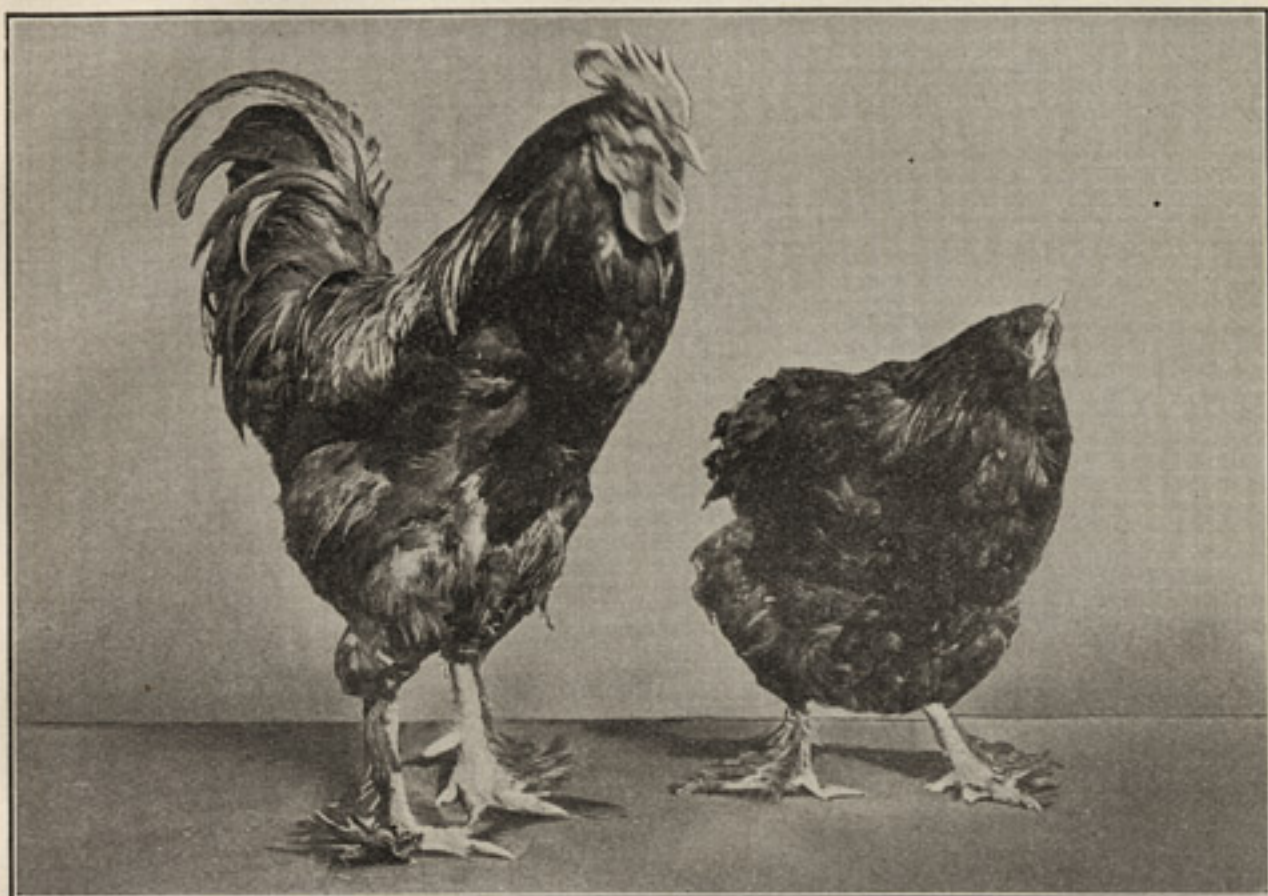
Poultry House and Yard, Los Gatos, California

The pullets and hens will lay better if there are no males with them, and if this is the case it is waste of room, labor and feed to run male birds with layers of table eggs.

Selecting Layers

The problem of success is not fully solved until we know how to get together a flock of working hens. It is something worth knowing and is claimed as a "secret" that may be, and is, sold. It would be worth nothing to many; to others it would be worth its cost chiefly after long practice in studying and noting "points"—the signs and marks in the hen's make-up, but the best evidence of what a hen will do as an egg layer is what she does, and the careful grower will find this out. He will do it as a matter of economy; he will want to cut out drones. He may do it by close watch or he may require the trap nest. This device requires attention and costs something to install and so is not in wide use, but it is in use by many successful growers. It is important to know how many unprofitable hens one is feeding, but some think we should begin to build up a laying flock among the pullets rather than at the trap nest. Observe the young stock in the fall. Select the precocious pullets, the ones that lay earliest. Build up a working flock by choosing birds that have the function of egg production strongly developed and that give evidence of this by early laying.

The Maine Experiment Station selected certain April hatched pullets in August and September, and a flock or pen that began with twenty-nine and was reduced to twenty-five by four dying within the year, averaged 180 eggs for the year ending August 30th. The smallest layer produced 137 eggs, eighteen laid over 160 each and eight over 200 each. The result was a high average, one that any poultry man would be proud to attain. How was the selection made? The Report—Farmers' Bulletin 357, says: "They were not selected because of form or type as indicating egg production, but they were either just picked up as they were found on the nests, or taken because *their combs were red, or because they tagged the attendant around and prated in the everyday hen language about the work they were soon going to do.*"



Black Langshan Cock and Hen

Any one that keeps in close touch with his fowls can do this and secure a flock that will have no poor layers. The very key to success is the ability to do this.

It is estimated that in unselected flocks the unprofitable hens average *forty per cent.* This is *absolutely fatal to any success worthy of consideration.* A flock of layers can be built up, or can be formed by weeding out the idlers. In some way get a flock of layers; it is another of the inexorable conditions of success. Eternal vigilance—this alone makes a full egg basket. Watch for the layers; come back to this point day by day, year by year. Watch the pullets; keep tab on them; note the signs of promise. The critical point in the whole business is to be able to select layers. Make a note of this and work up to it. Other things being well done, this will crown the whole and put money in your purse.

Winter Eggs

Now, with a selected flock, how shall we get eggs in the colder months? How shall we persuade *our* hens to lay when others are out on a "strike" and prices are high? The answer is not easy; if it was, there would be no incentive to get winter eggs, for others would be "in the running" and prices would decline. It is the generally moderate output of winter days that makes high prices and to change that condition radically is perhaps impossible. But it can be changed so far as to make it contribute to the profits of the wise. It is another of the great objective points in poultry culture. *Get winter eggs.* People do not stop eating eggs because it is winter.

The question runs deeply. See what can be said in answer. 1. Secure room enough to raise green food. Do not rely on drugs, egg foods, patent devices to stimulate egg production. Depend upon the health and vigor of your flock, and upon green feed, grass, vegetables, root crops, to add to your normal winter output of eggs. 2. Look after the moulting period; a hen that will lay in cold weather or rainy weather must come through the moult early and come through



Back Yard Poultry Keeping in California

well. That means that previous care and feed have brought her to the time of changing her coat of feathers in prime condition, full of vigor and ready to lay as soon as the new dress is on. Moulting makes a draft upon vitality that must be met by extra feeding and special feeding. Take extra care of moulting hens, and help them to get ready for the season of high-priced eggs. They must come into the season of rain and chilly winds in first rate condition. Experts doubt the wisdom of "forcing a moult." It is best when hens want to lay to let them lay.

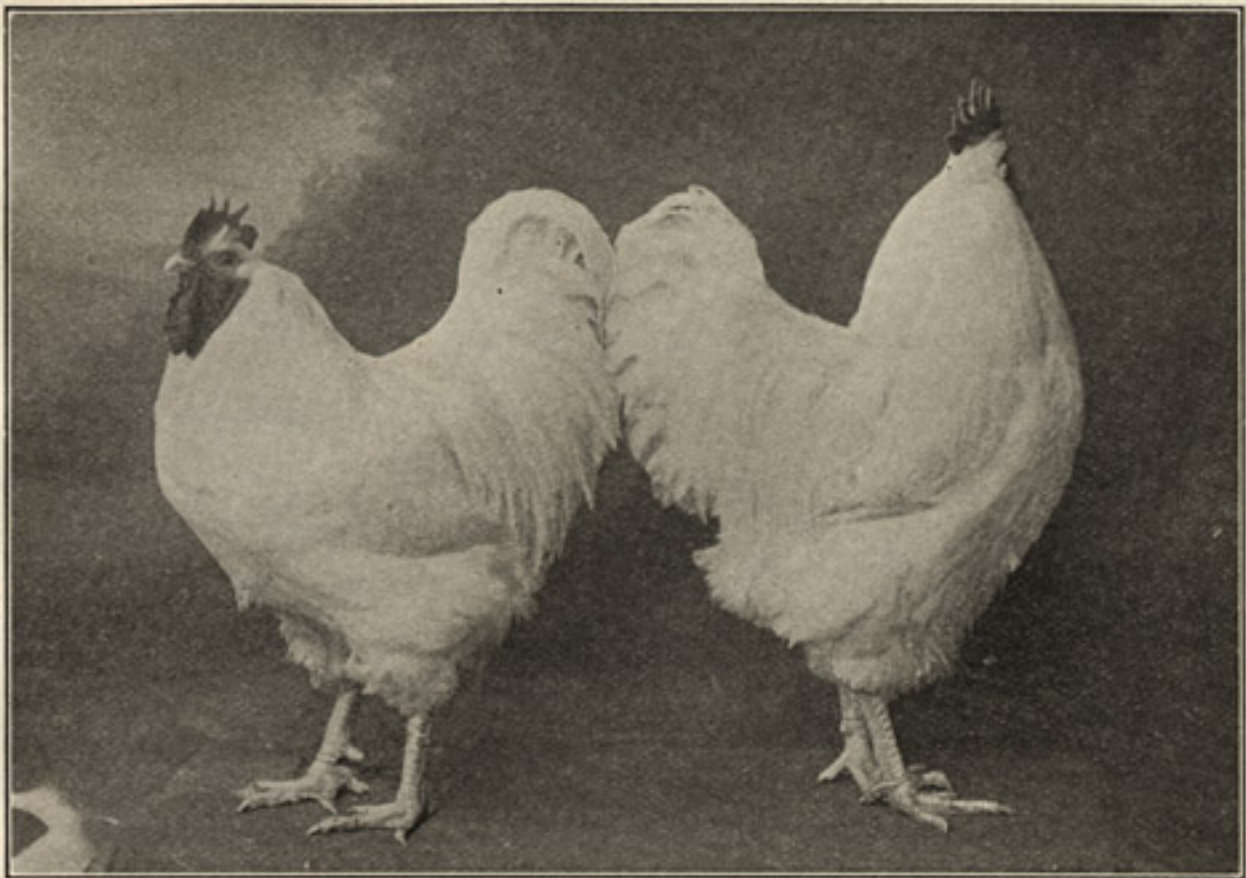
3. Provide for their comfort; secure all the sunshine possible; protect from winds and the chilliness which comes with rain outside; allow no more dampness inside than is in the air; see that dry straw or chaff is in the scratching shed and that exercise is possible without the feet getting "stuck up" with mud. A hen will not lay with cold or muddy feet. She will not mind cold weather, but will seek shelter from winds; see that they do not blow into the scratching shed.

The thing to do is to make Biddy comfortable. Is it spring greens, spring sunshine, spring temperatures, that fill the nests? Provide these conditions as nearly as may be and the hens will anticipate the spring months.

It is not easy, we admit, to induce a well-regulated lot of hens to produce winter eggs freely, but it can be done and will be done more commonly when we learn to make right conditions for a winter crop of eggs. And among these conditions the chief one is *comfort*. Perhaps the other factor in the problem is just *greens*, grass, roots, vegetables.

Possible Profits

How much can be made by raising fowls for the table and for eggs, depends of course upon conditions—the size of the flock, the cost of food, the egg output of the flock, the brevity of the moulting season, the number of winter eggs, success in hatching and breeding and distance and conditions to and of the market. But the inquiry here involves rather a basis for estimating profits, than the per cent of profit.



White Orpington Cockerels

Some Records

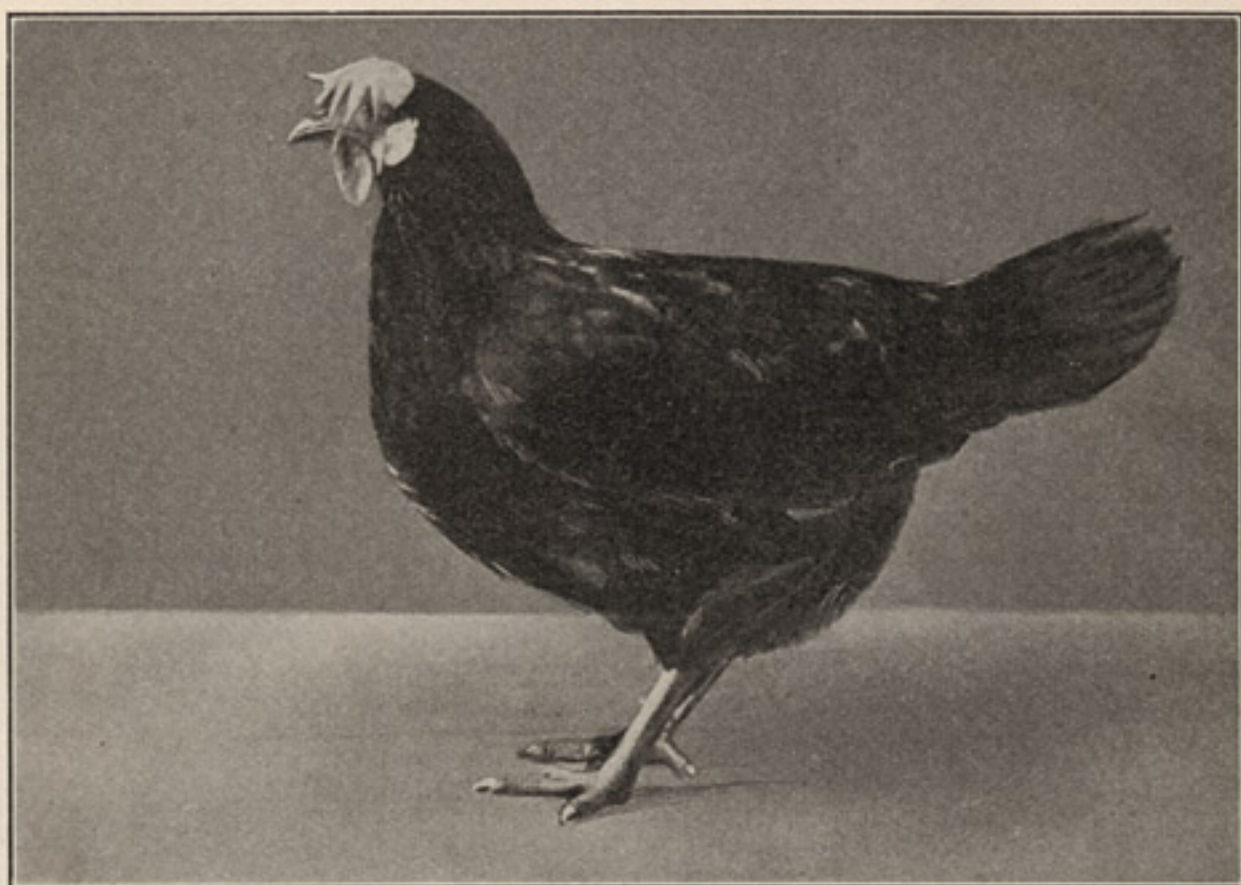
Individual hens have laid in one year 254 eggs, 281 eggs and 282 eggs. The net earnings of such hens would range from \$4.00 to \$4.50 each at 25 cents per dozen for the eggs, allowing a little more than \$1.00 for cost of keeping. Professor M. A. Jaffa, of the University of California, thinks \$1.25 "much more correct."

In the Missouri contest in 1912 the average was 134 eggs per pen representing the standard breeds, and the highest average for a group or pen was 1042 eggs from five hens, or over 208 eggs per hen.

This will serve as a guide—a standard that can only be approximated by a flock under the best management. We need not be misled by advertisements. There is a great difference between the phenomenal performance of a few birds, and the twelve months yield of a whole flock. *There is no 200-egg strain doing business in the field.* It is a goal worth striving for, and great progress has been made toward it, but it is too high an average.

At Cornell Station some years ago careful experiments showed a daily production of eggs from 100 hens of 23.2 eggs and the average yearly production per hen 129.7 eggs. The average cost per dozen eggs, was 9.2 cents for the year, and from December to March 16.3 cents. The average cost of feeding a hen for a year was 99.6 cents, while the annual profit on each hen was \$1.31. This has served as a guide, and it is commonly said that you can feed a hen for a dollar a year and reckon your profits at a dollar plus. But the first is uncertain and the last is poor business now, so considerable have been the gains of recent years. The larger returns are to be looked for; they are to be confidently counted on in planning a poultry farm. The breeding of laying strains of hens and the better management now taught makes a solid basis for expecting the larger net returns.

A single additional egg per week will add a dollar to the hen's credit, and if she has been loafing around the 100 egg mark, the four dozen extra will be a tribute to your management:



Black Minorca Hen

An associate editor of the *Pacific Rural Press* of San Francisco, recently said in this valuable journal:

"My wife and I started the poultry venture with \$1,275. We bought ten acres, paid \$400 down and went in debt \$1,000, and with \$875 we built a place to live in and a brooder house. Then I went to work at the carpenter trade, building poultry houses and brooder plants on other ranches, and earned enough to buy hatching eggs in a short time, and by the help of my good wife we raised our first flock, which consisted of 500 fine pullets. We had a long, hard pull, with hard work and sacrifice, but we built up a business that pays well for the extra effort.

"Today we have a beautiful home, with trees for shade, well tilled garden, and greens for poultry, with 3,000 choice laying hens that have been selected for egg production, and they make us an income above the average salaried positions."

This is about the goal which good management will reach, starting with limited means. With knowledge of the business and adequate capital to equip the farm in an Eastern State, 3,000 hens have paid about \$2.50 each net, or \$7,500 yearly. This has allowed something for interest on capital invested, and represents a purely commercial poultry farm, the production of poultry and eggs for the market.

In a Western State on three acres of ground a grower has for several years kept 700 hens and these have returned him an average net income of \$1,300.

In California on four town lots, 500 hens are the chief factor in producing a yearly income of about \$2,000. The owner's books showed a profit for one year of a little more than \$2,300. In this case a large business is done in hatching and shipping chicks, and the work is all done by the owner and his boy, save occasional whitewashing by hired labor.

This matter of hatching and shipping chicks is, so to speak, a by-product, but helps to increase the income. Where the returns are as good as indicated in these examples, it must be remembered that years and experience are behind them, and if we were to repeat equally well accredited instances of success in this



White Leghorns. A Petaluma Egg Farm

State, it would all come to this—that success results from building up the *conditions* upon which success must rest.

The Dollar Basis to Start With

In this State poultry men are reported as saying that “if a man cannot make more than a dollar a hen, he ought to quit.” But that is debatable. Many a family can make \$1,000 a year by keeping 1,000 hens, and make it easier and more surely than in almost any other way. They can do it with small capital and on two or three acres. Perhaps not at once; it is wise to begin with a few fowls and increase the flock as one increases in ability to manage. Conceit may go with ignorance, but confidence based on knowledge is strength, and will win out.

Here the rudiments of knowledge go with great natural advantages. California offers the grower help at every point. Emphasize all we have said of it elsewhere. Count especially on green feed in reducing the expenses of supplemental greens and meals of various kinds. Alfalfa alone is of such value to the poultry man, and is so easily grown that it ought to insure the success of almost any beginner who will provide decent shelter and keep houses and yards clean. It contributes to the production of eggs and to the health of the flock, and one might venture to begin with an alfalfa field, a hay cutter or food cutter, and a group of cypress trees for roosting places, and so get well started.

Make the most of the climatic conditions. The hen seems to live to eat, but under right conditions she eats to lay, and vigorous, active, well-bred young hens *must* lay if given in addition to grains and meat scraps plenty of tender alfalfa, cured alfalfa cut into short lengths and added to the mash, or alfalfa meal. We touch it again at this point to emphasize our sense of its importance. And we add our conviction, the result of the observations of half a lifetime, that if poultry keeping has failed to return a fair profit in this State, there has been neglect in establishing, by study and attention, by intelligent feeding and by cleanliness, the conditions of profit.

APPENDIX

If any are disappointed because we have left the details of success with poultry to be worked out in practice, we suggest that in this business, knowledge should be gathered from many sources—the best poultry journals, the special articles in the best magazines, and the booklets issued by incubator manufacturers and the manufacturers of poultry food, several of whom conduct large poultry farms of their own, and put what they have learned at the service of the beginner without cost. We suggest especially that much dependence be placed upon the literature issued by experiment stations of various States and by the *Department of Agriculture*. Much of this is free, in some instances a slight charge is made, but it is a *vital type* of literature and the poultry grower cannot afford to be ignorant of what experts in this industry are doing and saying.

We append a list which will be of service.

The following bulletins can be obtained upon application to the Superintendent of Documents, Government Printing Office, Washington, D. C., at a cost of 5 cents a copy—send cash or money order, not stamps:

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| <p>41. Fowls. Care and Feeding.</p> <p>84. Expt. Sta. Work VII. Ground vs. whole grain for chicks.</p> <p>97. Expt. Sta. Work X. Animal matter a necessity for poultry.</p> <p>107. Expt. Sta. Work XIII. Feeding of ducks.</p> <p>114. Expt. Sta. Work XIV. Number of hens that may be kept in one pen.</p> <p>128. Eggs and their uses as food.</p> <p>141. Poultry raising on the farm.</p> <p>144. Expt. Sta. Work XIX. Condimental and poultry foods. Dressing and packing.</p> <p>177. Squab raising.</p> <p>182. Poultry as food.</p> <p>186. Expt. Sta. Work XXIII. Rations for laying hens. Early moulting of hens.</p> <p>190. Expt. Sta. Work XXIV. Cost of eggs in winter. The chicken mite.</p> <p>200. Turkeys, standard variety and management.</p> <p>210. Expt. Sta. Work XXVII. Preservation and value of hen manure.</p> <p>222. Expt. Sta. Work XVIII. Weight of foods.</p> <p>225. Expt. Sta. Work XXIX. Experiments with turkeys. Mineral matter for chickens.</p> <p>227. Expt. Sta. Work XXX. Poultry houses.</p> <p>233. Expt. Sta. Work XXXI. Condimental foods. Animal feed for ducks.</p> | <p>236. Incubation and incubators.</p> <p>244. Expt. Sta. Work No. 33. Methods of feeding poultry.</p> <p>237. Expt. Sta. Work No. 32. Amateur poultry raising.</p> <p>251. Expt. Sta. Work No. 34. Fertility of eggs.</p> <p>281. Expt. Sta. Work XL. Incubation of chickens.</p> <p>296. Expt. Sta. Work XLI. Preserving eggs.</p> <p>305. Expt. Sta. Work XLII. Healthy poultry.</p> <p>317. Expt. Sta. Work XLV. Water fountains. Catching hook.</p> <p>355. A successful poultry and dairy farm.</p> <p>357. Farmers' Bulletin. Method of poultry management at Maine station.</p> <p>374. Expt. Sta. Work LIII. Colony houses for brooders.</p> <p>381. Expt. Sta. Work LIV. Gasoline heated colony brooders.</p> <p>412. Expt. Sta. Work LVIII. The forced moulting of fowls.</p> <p>435. Expt. Sta. Work, Vol. IV, No. 2. Lice on poultry.</p> <p>445. Marketing eggs through the creamery.</p> <p>452. Capons and caponizing.</p> <p>465. Expt. Sta. Work LXV. Hatching and rearing of turkeys.</p> <p>530. Important poultry diseases.</p> <p>Cir. No. 99. Hatching and rearing of chicks. Col. of Agr. Berkeley.</p> <p>Bul. 164. Feeding poultry. Col. of Agr. Berkeley.</p> |
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In anticipation of inquiries we add the following notes:

1. Land can be bought at from \$50 to \$250 an acre.
2. If food supplies are to be grown, the land should be a sandy loam, free in any case from adobe and well drained.
3. Eggs can be bought in every part of the State, and young chicks will be shipped by reliable poultry men.
4. Locations should have relation to market centers and facilities for shipping products. They should be chosen, too, for the most favorable climatic conditions, and perhaps also with respect to supplies of commercial poultry food.
5. The capital required will depend upon location, the acreage desired and the number of fowls to be kept. A good start can be made with \$1,000 to \$1,500 by an energetic man.
6. If the beginning is to be "at the bottom," without experience, it should of course be in a small way, increasing the "plant" as knowledge grows.
7. As questions of location often involve other matters than this particular industry, the general attractiveness of a region, the increase of values, etc., persons outside of the State may find it important to study locations in advance of coming. In such case write to Board of Trade at the county seat for information. Most of the counties publish descriptive booklets. Information about the State in general can be found in the California Map Folder and California for the Settler, issued by the Southern Pacific Company. Write to the nearest agent or to the General Office, Flood Building, San Francisco, Cal.

Any representative of the Southern Pacific Passenger Department noted below will be pleased, on application, to furnish further information about California, including railway rates and service:—

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Jas. Horsburgh, Jr., General Passenger Agent.....San Francisco, Cal.
F. E. Batturs, General Passenger Agent.....Los Angeles, Cal.
J. M. Scott, General Passenger Agent.....Portland, Ore.

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