

SCIENCE UP TO DATE.

NOTES AND COMMENT OF INDUSTRIAL FIELDS.

An Important Chapter on Medical Science—An Improved Axle Box—A Humane Check Reins—General News of Progress.

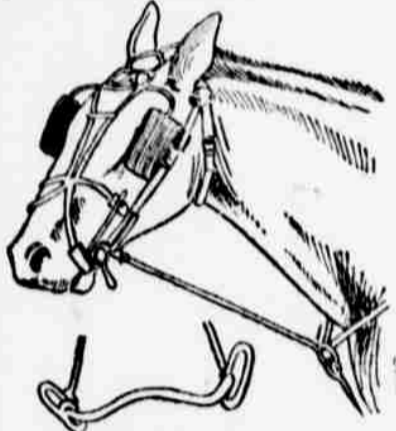


THE IMPORTANCE of cleanliness for the healthy performance of the functions of life is the subject of a lecture delivered at the London Institute by Prof. Vivian Lewes, and published in Nature.

We may, says Prof. Lewes, live for days without giving our stomach any work to do, the liver may cease action for several days before death ensues, but it is impossible to survive for the same length of time if the functions of the skin are entirely stopped. Indeed, the professor cites the case of a child which, being gilded all over to pose as a statue, died in a few hours. The sudoriferous ducts, of which there are about 3,500 to the square inch of skin, perform the important function of throwing off the moisture produced during the combustion of waste tissue by the oxygen of the blood, and secrete about twenty-three ounces of perspiration in the twenty-four hours, which evaporates without producing any sensible moisture of the skin. This throwing off the perspiration and its evaporation is a beautiful natural contrivance for regulating the temperature of the body, as the conversion of the perspiration into vapor renders latent an enormous amount of heat, which, being principally derived from the body, keeps it in a state of comparative coolness. A bath heated to 120 degrees Fah. is almost unbearable, but one may be exposed for some time to a temperature of 325 degrees Fah. in an oven. The perspiration keeps the body cool. The twenty-three ounces of perspiration secreted daily contains about one ounce of solid matter, which is left behind on evaporation. Apart from this there are sebaceous glands which secrete oily and resinous matters, of which the wax in the ear is a type; these, mixing with the solid matter and dirt adhering to the skin, form a compound which tends to clog the pores of the skin, and it is the removal of this, by the morning tub and rough towels, which is responsible for the refreshing influence of the bath.

Improvement in Check Reins.

A combined check-rein support and winker stay has been patented recently. The overcheck bit is shown by itself under the horse's head. This



THE IMPROVED CHECK REIN.

support for an overdraw check is designed to prevent the check rein from wearing or rubbing against the head of the horse, and the winker stay is so attached that the blinds or winkers may be readily adjusted at any desired angle to the animal's head. The support consists of a face cross bar of leather, or metal and leather, having felt on its inner side and resting on the animal's face, where it is held by means of two side bars, preferably by spring steel, leather covered. The bars are curved so as not to touch the animal's face, and their upper ends are attached to the crown strap of the bridle, which may also be of felt or similar material on its under side. There are loops or sockets, each with rollers, on the side bars, through which pass the rearwardly extending members of the overdraw check rendering it very sensitive to every movement of the horse's head. The winker stay consists of a rod with a shank adjustable by a set screw in a slide-way in the central portion of the face bar, the rod having in its ends sockets in which the wires constituting the frames of the winkers are conveniently adjustable.

Salophen as an Anti-Rheumatic. According to the observations of Drs. R. Ciullini and A. Viti, at Siena, Salophen, is an excellent agent, both in acute and chronic rheumatism, its advantages over salol and salicylate of soda being that it is tasteless not gastroscopic, and devoid of unfavorable after-effects.

A chief indication is in the initial stage of acute arthritic and in mild or subacute cases. In obstinate or chronic cases, it is advisable to follow its administration with that of iodide of potassium. The antipyretic action of salophen is not marked. In the intestinal tract it acts as an antifermentative, and it destroys the reaction of indican in the urine. Doses as high as 5.0 to 6.0 grs pro die continued for several days are not attended with disturbances of any kind.—Therapic Clinica, April 4 1894.

Report of the Commissioner of Patents. The customary annual report to the secretary of the interior, for the fiscal year ending June 30, 1894, by Mr. John S. Seymour, commissioner, has just been published in the official Gazette.

from which it appears there were received in the fiscal year ending June 30, 1894, 35,952 applications for patents; 1,550 applications for designs; 108 applications for reissues; 2,193 caveats; 1,770 applications for trade marks; and 368 applications for labels. There were 22,546 patents granted, including reissues and designs; 1,656 trade marks registered; and two prints registered. The number of patents which expired was 13,167. The number of allowed applications which were by operation of law forfeited for non-payment of the final fees of 4,596. The total expenditures were \$1,053,962.38; the receipts over expenditures were \$129,560.80, and the total receipts over expenditures to the credit of the patent office in the treasury of the United States amounts to \$4,499,596.74.

During the past year there has been a notable falling off in the applications for patents, designs, etc. For the year ending June 30, 1894, the number was 39,206, against 43,589 for the previous year, and more than the last mentioned number for each of the three prior years. The cost of publishing the Official Gazette was \$113,642, of which 7,000 copies were issued weekly, the cost of each copy being a little over \$16 per year, while the subscription price is \$5 a year. The paid circulation is small. A large number are given away.

A Moving Mountain.

A traveling mountain is found at the cascades of the Columbia. It is a triple peaked mass of dark brown basalt, six or eight miles in length where it fronts the river, and rises to the height of almost 2,000 feet above the water. That it is in motion is the last thought that would be likely to suggest itself to the mind of any one passing it, yet it is a well-established fact that this entire mountain is moving slowly but steadily down to the river, as if it had a deliberate purpose some time in the future to dam the Columbia and form a great lake from the Cascades to the Dalles.

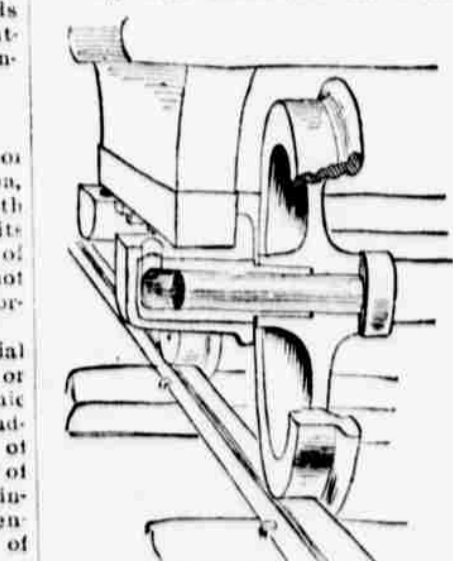
In its forward and downward movement the forest along the base of the ridge has become submerged in the river. Large tree stumps can be seen standing dead in the water on this shore. The railway engineers and brakemen find that the line of railway that skirts the foot of the mountain is being continually forced out of place. At certain points the permanent way and rails have been pushed eight or ten feet out of line in a few years.

Geologists attribute this strange phenomenon to the fact that the basalt, which constitutes the bulk of the mountain, rests on a substratum of conglomerate or of soft sandstone which the deep, swift current of the mighty river is constantly wearing away or that this softer subrock is of itself yielding at great depths to the enormous weight of the harder mineral above.—Goldthwait's Geographical Magazine.

- Table of Weights and Measures.**
- 4 teaspoonfuls of liquid equal 1 tablespoonful.
 - 4 tablespoonfuls of liquid equal 1/2 gill.
 - 4 tablespoonfuls of liquid equal 1 wineglassful.
 - 1 tablespoonful of liquid equals 1/2 ounce.
 - 1 pint of liquid equals 1 pound.
 - 2 gills of liquid equal 1/2 pint.
 - 1 kitchen cupful equals 1/2 pint.
 - 1 quart of sifted flour equals 1 pound.
 - 4 cupfuls of flour equal 1 pound.
 - 1 tablespoonful of flour equals 1/2 ounce.
 - 3 cupfuls of corn meal equal 1 pound.
 - 1 1/2 pints corn meal equal 1 pound.
 - 1 cupful of butter equals 1/2 pound.
 - 1 pint of butter equals 1 pound.
 - 1 tablespoonful of butter equals 1/2 ounce.
 - 1 pint of chopped suet equals 1 pound.
 - 10 eggs equal 1 pound.
 - 2 cupfuls of granulated sugar equal 1 pound.
 - 1 pint of granulated sugar equals 1 pound.
 - 1 pint of brown sugar equals 1 1/2 pounds.
 - 2 1/2 cupfuls of powdered sugar equal 1 pound.
 - 16 drams equal 1 ounce.
 - 16 ounces equal 1 pound.

An Improved Car Axle Box.

The box and bearing shown in the illustration enables a sufficient quantity of oil to be supplied to keep the bearing well lubricated for a long



time. Within the box is held a bearing adapted to slip over the spindle, the bearing being closed at its outer end, but having in its upper side a hole in which oil may be poured into a recess formed by the outer end of the bearing and the end of the spindle. The axle and wheel are held in the correct relative positions by a collar rigid on the axle and abutting with the wheel hub.

DAIRY AND POULTRY.

INTERESTING CHAPTERS FOR OUR RURAL READERS.

How Successful Farmers Operate This Department of the Homestead—Hints as to the Care of Live Stock and Poultry.

Source of the Butter Flavor. Storr's experiment station bulletin has the following.

The butter aroma appears in the butter as the result of the ripening process. Sweet-cream butter does have this delicious flavor, and while there is a demand in our markets, perhaps growing demand, for sweet-cream butter, it never develops the delicate flavor known as the butter aroma. During ripening, certain changes take place in the cream, some of which we understand, and others which are at present beyond the reach of chemical knowledge. The composition of cream is essentially the same as that of milk, except in the higher proportion of fat. It is made up chiefly of butter-fat in the form of globules, of casein in a partial suspension in the liquid, of milk-sugar in solution, and of a small amount of albumen, the form of an extremely delicate network of fibers which we call fibrin. Cream always contains a large number of bacteria, yeasts and molds, which are the active agents in ripening. The sources of these micro-organisms are varied. They are not present in the milk when secreted by a cow, but find their way into it in a variety of ways. Some come from the air, some from the hairs of the cow, some from the dust of the barn, some from the hands of the milker, some from the milk vessels, and others from other sources of contamination. The chances of contamination are sufficient to stock the milk with an abundance of these organisms under all circumstances. By the time the cream has reached the creamery

thinks of the many diseases that may thus be scattered widely over a district, and pre-eminently of cholera, typhoid fever, scarlatina and diphtheria, epidemics of which have frequently been caused by infected milk, but such speculations may be said to be purely imaginary, without a practical example, and the power of supplying that proof is my reason for writing this article.

The evidence adduced appears to us, as aforesaid, to be incontestable. Adding the cases in the rural district to those investigated in a town, Dr. Welply found sixty-one cases of typhoid fever, every one of which was capable of being easily traced back to the imported one. Fifty-two contracted the disease directly through the creamery, and the remaining nine indirectly by means of food or milk from dairies which became infected secondarily. The opinion here expressed was fully confirmed by a medical officer of the local government board, who subsequently made an independent and exhaustive investigation. Wherever there is a creamery, Dr. Welply says, there should be a public inspector of the dairies that supply milk to it, and he quotes the rules in force in Denmark, of which two are as follows:

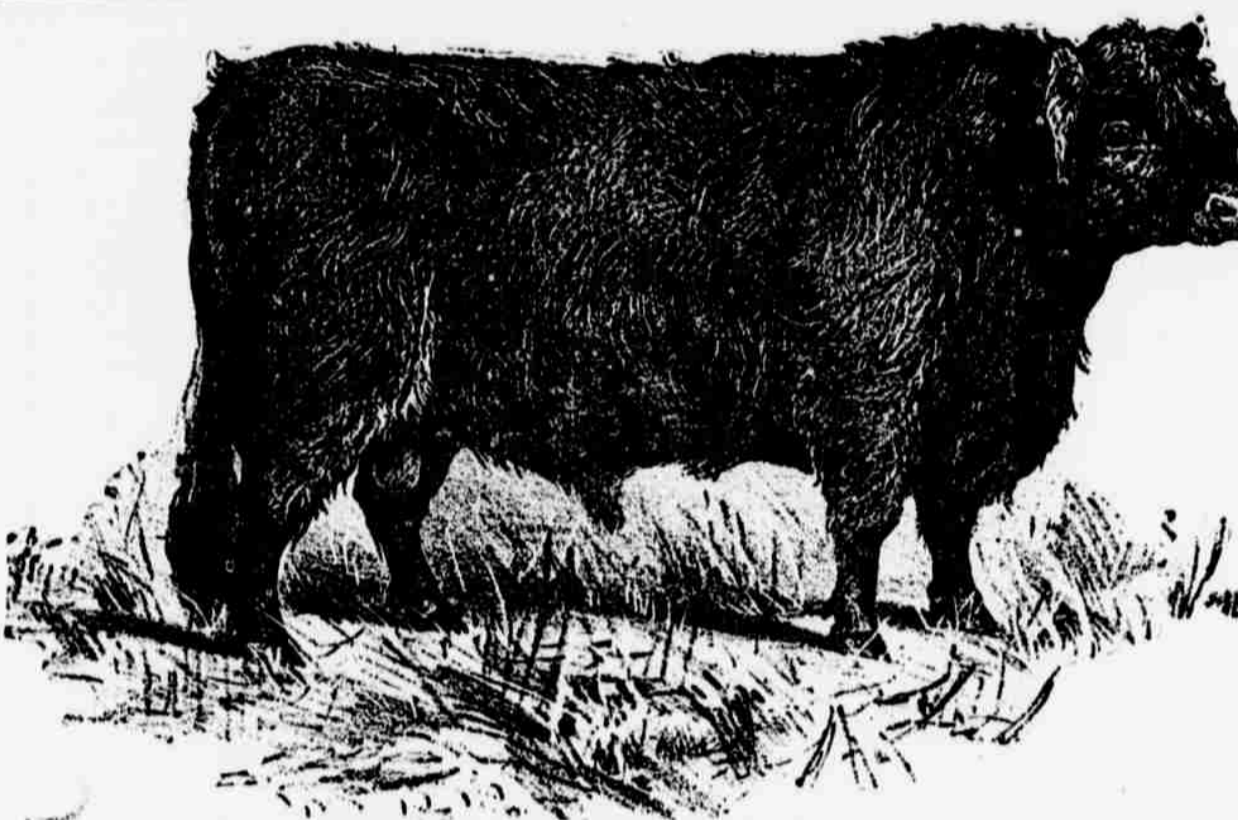
"If an infectious disease breaks out in the family or among the stock of a member, the member must immediately cease to deliver milk at the dairy until the disease has disappeared and his farm has been properly disinfected. In the event of sickness among the staff of the dairy, the dairyman shall have the sick person removed immediately, and the dairy must be disinfected. Any infringement of this clause shall be punished by a fine up to \$25.

"It shall be the duty and right of the directorate and of the dairyman, whenever they think fit, to visit the members' farms, and to inspect the sheds, fodder lofts, and troughs, fields, milking sheds, etc., and the members must give them all necessary help and information. If it is afterwards found out that a member has

concealed anything or given false information, he shall be fined from 25 to 100 shillings, and make good any loss or damage he may have occasioned."

A Lover of Poultry.

Keeping poultry teaches love in its broadest sense. It compels man to love his home, to watch the little matters, to be regular, to be frugal, to be industrious, says Homestead. All these go to make up a happy life, and to be in love with that which is dear to him. It is an old saying that he who has no pets has no love for home. The woman who delights in the company of neither bird nor animal, finds the society of gossips and street runners the most attractive. The poultry woman makes the model wife. City life has no charms for her. Her home and her fowls are everything, and in them she finds comfort, health and strength. The patient, kind hearted woman alone makes a success in egg and poultry culture, while the fickle-minded, grumbling female would not think of stooping so low as to "mingle with such pests." A once poultry woman was, by force of circumstance, taken from her country home to a tenement in the city. Although she lives in a more elaborate dwelling, and owns finer



THE NOTED GALLOWAY BULL HARD N OF ENGL'ND.—FARMERS' REVIEW.

it contains a quantity of organisms varying widely with temperature and other conditions, and it is to these that the subsequent ripening is due. During the period of ripening the organisms are growing and producing profound changes in the cream. Bacteria are primarily destructive agents. During their growth they are pulling to pieces some of the chemical compounds of the cream and reducing them to a condition of greater simplicity, giving rise to a greater number of so-called decomposition products. Chemistry has not yet explained all of these changes. A few of them we partially understand. We know that some of the organisms act upon milk-sugar, converting it into lactic acid, with the carbonic gas as a by-product. We know, also, that sometimes butyric acid is produced, and that sometimes ferments similar to rennet and trypsin make their appearance in ripening cream. Alcohol is also a common product, so much so that the butter flavor has sometimes been attributed to this product alone.

Dangers in Dairies.

A foreign exchange calls attention to the great danger that meets the milk consumer, when said milk is drawn from a large number of cows scattered over many farms, unless some rigid system of inspection be in vogue. Milk is known to be a good medium for the carrying of disease germs, and certain maladies are spread through whole communities in this way. If scarlet or typhoid fever, for instance, breaks out on a farm, from which milk is being shipped, there is great danger that the germs of these fevers will be carried to the factory, and thence scattered far and wide. Dr. Welply of England, writing on this point, says:

"Dairy farming has been partly revolutionized by the adoption of creameries, to which a number of farmers send their milk. The milk of all is there mixed together, the cream removed, and some of the mixed skim milk—known as separated milk—is then sent back to the farms. The common danger becomes evident as soon as attention is pointedly drawn to the fact that a group of dairies is thus placed in intimate relation with each other. The milk going out from one goes to all, and bears with it any impurity that it may have acquired at its original source. Instinctively, one

concealed anything or given false information, he shall be fined from 25 to 100 shillings, and make good any loss or damage he may have occasioned."

English Duck Farming.

The equipment of an English duck farm is very simple, says Dr. Frean. One or two wooden sheds, each with a run in front, are sufficient. The classification of the ducklings is determined by age. They are, accordingly, divided into "flocks" of one week old, two weeks old, and other ages. At a week old a flock of Aylesbury ducklings is an extremely pretty sight. Each bird is a little ball of yellow, fluffy down, furnished with a bill of delicate heliotrope color. The youngsters are very nimble, and keep together as they run up or down, or across their limited range, uttering continually the plaintive call which falls upon the ear almost like a plea for protection. As age advances, the feathers turn white and the bills grow paler. Very commonly the run is littered with straw, upon which the little creatures will peacefully nestle on a drowsy, sunny afternoon. As an example of economy in small things, it may be noted that the straw is periodically gathered up, shaken out elsewhere to dry and sweeten, and then strewn again upon the run or under the shed. In one case, where a large shed is used for the ducklings, the straw is taken out daily, and the mud floor swept, sprinkled with a weak solution of carbolic acid, and dusted with lime before the straw is put back again. Great care has to be exercised in keeping the ducklings healthy, and cleanliness is necessarily a first consideration. In the spring of the year, a duck rearer near Tring lost 1,000 ducklings, and attributes their untimely death to a species of louse, caught from the brood hens, he opines, fastening on the back of the neck. It will be understood that the young birds destined to be killed as ducklings are never allowed to roam at large, nor do they go on the water, the object being to reduce the wear and tear on the muscular tissue to a minimum, so that as much as possible of the food may be utilized in adding to the weight of flesh upon the bird. As the ducklings are never kept for breeding purposes, this somewhat unnatural mode of life can have no ill effects of an heredi-

turniture, she is cooped up in a narrow court amid the noise and din of slop carts and drayages. "If I could only get out of this way of living," she said, "back again to a rural home, where I could keep poultry as I used to. Then I always had money and clothing—many a month I made more clear money with my fowls than my husband did with his crops—but, helping a friend on a note did it, and here we are: the mint has passed out of our hands. Were it not for the disgrace I would far rather live all my life in a real jail, behind genuine iron bars, than to subsist from hand to mouth in this prison they call city life." If there were more such sensible women in this world there would be less half-starving families in the cities.

One Sided Dairy Knowledge.

Beware of the man of one experience. His knowledge is very exact, but it is too narrow. In an esteemed contemporary we find a man writing about garget—his cows all got it, and because he was feeding four parts of corn meal to one of bran, he attributes all his troubles to corn meal, and advises, as does the paper, against too much corn meal. All of my cows got garget once, and I had been feeding them on shorts, or a rich kind of bran with no corn meal, ergo, do not feed shorts. Probably others could give a like experience with all the other popular feeds until we could not feed anything. Again I say, beware of the man with one experience. His limited knowledge makes him the more positive in his opinions. He who really knows it all knows there are two very strong sides to all questions, with any number of conditions to be taken into consideration.—Farm and Home.

HOME FRUIT CAKE.—Three teaspoonfuls flour sifted with three teaspoonfuls Price's cream baking powder, one teaspoonful each brown sugar and molasses, half a teaspoonful of butter, three eggs, half a teaspoonful each allspice, cloves, cinnamon and nutmeg, and half a pound each stoned raisins, currants, citron and figs cut fine, with one teaspoonful nut meats. Mix the fruit and spices together the day before making the cake. Bake in a slow oven.

FERTILIZATION increases the size and quality of the fruit.

Roughage for Cows. John W. Delk, writing in Epitomist, says: We have been testing for some time the different kinds of roughage commonly raised on the farm, and find that common fodder corn is one of the best for the cows giving milk. Our cows do better, give more milk, and produce more butter when fed on it during winter than any other kind we have tried, and we get such a large yield from the ground, as compared with other kinds of roughage, making from seven to eight tons of the very choicest per acre when it is cured and housed as it should be. When it is cut at the right stage, and properly cured, our cows even eat the stalks, so there is but very little waste. Sorghum is our next preference; it makes an excellent feed for cows in milk, and is one of the best for young cattle. Our cattle will all stay fat and sleek on it, but the ones in milk, when changed from sorghum roughage to that of fodder corn, show a slight increase, both in milk and butter. Hence we recommend fodder corn, in preference to other hay or roughage, for it has been proven to be a fact, here in the south, that sorghum hay could not be excelled by many others for dairy cattle, and some even went so far as to say that it was the best—none excepted. Let that be as it may, our experience has proven to us that the fodder corn produced the greater amount of milk and butter, and that is what we feed and attend to our cows for. It not only proves to be good in winter, but in the dry, hot weather of late summer. When our pastures are failing, we find that a bundle of fodder corn not only increases the amount of butter, but is eaten with a relish by the cows. It may not produce as much per acre as some, such as sorghum, cow-peas, etc., but will make more than the major part of our haying plants per acre, besides giving so much more beneficial results.

LIQUID MANURE.—It would be well if all practical farmers were to record their experience with liquid manure. This is mine. As a young man I had my tanks, pumps and carts. All through the winter it took a man and horse about two days a week to keep the tanks from overflowing. I always applied the liquid to grass, but seldom found much benefit from its application, save in early spring. I estimated the cost of its application at 10 shillings a week. But the pumps were always getting out of order, the distributor would choke, and the tanks would overflow; so I turned all the rainwater from the house and farm buildings, which had previously gone elsewhere, and every drain that I had on the homestead into the principal tank, and then had a six inch pipe laid to a pasture, down which the liquid manure could run by its own gravity. It then irrigated about one-fourth of an acre, and produced a wonderful increase of grass on that rood of land. But I found that 100 pounds of guano—it was guano in those days—gave quite as much grass, so I came to the conclusion that the full value of the liquid manure was 10 or 15 shillings, and not the £26 a year it had cost me. Further, it was no trouble beyond drawing out a few furrows upon a fresh piece of land in the autumn. In this district, where we usually have plenty of straw, I much prefer covered yards from which no liquid can escape.—C. S. Read, in Bell's Messenger.

THE CABBAGE MAGGOT.—Extensive depredations of this maggot are reported this summer by the market gardeners of Long Island. The early cabbage suffered very severely from them, while the late planted varieties are almost entirely free. It has lately been learned that the insect lives and breeds on the charlock or wild mustard and other plants of the mustard family, in the absence of cabbage plants. The omission to grow a crop of cabbages will not, therefore, ensure a riddance of the insect the following year, unless at the same time the ground has been kept free of weeds, especially those of the mustard tribe. One of the best means of preventing the attack of the insect, which lays its eggs on the young plants soon after transplanting, is to wind a bit of tissue paper around each plant. But this is expensive except in private garden operations on a small scale. A number of substances have been used for the purpose of killing the maggots, but none really satisfactory. Prof. Slingerland of the Cornell experiment station, is at work on this problem. The insect from which the maggot comes has until lately been thought to be Anthomyia brassicae, but lately it has been learned that this is a mistake, and it is doubtful if the insect, which bears this name is in this country. The true name is now said to be Phorbia floccosa.—Vick's Magazine.

MONEY IN FARMING.—There is no trouble in making farming pay for the labor bestowed upon it, together with a good per cent on the value of the property concerned. We know this from our own operations, and we also see it illustrated by any number of farmers round about us. The idea that there is no money in farming is all nonsense. Go through any community of farmers and it will be found they are generally getting on well in the world. Anything different from this is the exception to the rule. At the same time they have but a small capital invested, yet they spend money freely, have more of the comforts, luxuries and pleasures of life than any other class of laboring people, and in addition, as a rule, lay by something each year out of the profits of their business.—The

CULTIVATION increases the size and quality of the fruit.