

HENHOUSE AND PIGGERY PLANS.

1. What would you map out as an up-to-date arrangement for the inside of a warm henhouse, that is well lighted on the S., E. and W. sides; that is 18x18 in size, and that slopes in the roof from 18 feet to 8 feet? The door is on the N. side.

2. The door of a pigger for cleaning is on the N. side, the door for feeding on the S. There are windows on the E. and W. The dimensions of the pen are 18x19x12 high, with cement floor. How many hogs would that house accommodate? What would be an ideal arrangement for the inside? Would an upstairs sleeping place be advisable or not?

Lanark Co., Ont.

Ans.—1. In one end of this house we would arrange to have an open shed, in which the hens could scratch and exercise themselves. This room would be open on one side, either the south or east, if possible, and would have a curtain or sliding-door to close it up on very windy days. This is about the only radical change we would make in the house described, but it is certain that in connection with a warm house some such exercising place is necessary. As has often been said before, the perches should be near the floor, all on a level and large enough for the birds to stand on comfortably. Grit and dust-boxes should be installed, and the floor kept perfectly dry and clean.

2. A pen of this kind should have windows on the south side. The troughs might be made of cement, and the partition between the feeding passage and pen made of No. 9 wire. A slope in the floor of about one inch from front to back of pen is advisable. Elevated sleeping beds are best, but they need not be more than two feet high, and should be solid upon the ground. Where these beds are open beneath the space below becomes very foul and unsanitary, unless great care is exercised in cleaning it out frequently.

HYDRAULIC RAM.

A stream crosses my farm 500 feet from the buildings. There are at least three barrels flowing past a point every minute, and the stream has a fall of at least six inches in every 200 feet, and its bed is about 50 feet lower than the ground on which the buildings are situated. I want to know if a hydraulic ram can be arranged on the stream so as to force the full of an inch or larger pipe of water to the buildings, and if so, if sharp angles in the pipe would hinder the flow? I would also like to know the principle on which a hydraulic ram works, how it is constructed, or where procured? Also, how the refuse in the water is prevented from entering and clogging up the pipe? Any additional information you may suggest will be acceptable.

Renfrew Co., Ont.

T. R.

Ans.—It would be necessary in this instance to secure a fall of at least three feet from the mouth of the supply pipe to the machine. The length of pipe laid to secure that amount of fall is not of much consequence, except that for any length above 25 feet the friction reduces the capacity of the supply without adding to the force of it. With a low head and a large supply of water, as in this instance, it would be best to install a large size of machine, say No. 6, which requires a 2½-inch supply pipe, and a 1½-inch discharge pipe. The ram may be placed in a pit, provided there is proper drainage to carry off the waste water. Sharp turns in either supply or discharge pipe should be avoided. If elbows are necessary, they should be made as large as possible.

The principle of the hydraulic ram is as follows: A machine is situated at a point below the supply of water, and the water is carried to the machine through the supply pipe. This pipe must be laid on a slope, not steeper than one to five or six. The water from the supply, at the start, wastes through an opening in the pipe, but almost immediately the rush of water through this opening raises into its seat a valve, which closes the opening. The sudden cut-off produces a great pressure through the whole length of pipe and through the machine attached. This pressure opens a valve at the bottom of the dome or bell-shaped attachment, which is the principal part of the machine. The water rushes through this valve into the dome, partly filling the latter. When pressure is reduced by this escape of the water, the valve in the waste-opening drops out of its seat, and allows the water again to waste. The closing of the waste valve and the opening of the dome valve occur alternately in rapid succession, and with each alternation more water is forced in the dome. The discharge pipe passes from the bottom of the dome, and as soon as the water covers the entrance of this pipe the air in the upper part of the dome is imprisoned and becomes compressed more and more with each stroke of the waste valve. The expansion of this compressed air in the dome forces the water up the discharge pipe to a height considerably greater than the original head. The impulsive pressure given to the water by the sudden closing of the waste valve opens the dome valve against a considerable pressure above it, which a steady pressure would not be able to do. The impul-

sive action is the secret in the working of the hydraulic ram. It will be seen that a considerable proportion of the available water is wasted in the action of the machine. The machine makes use of the energy of the water supplied to raise to a greater height a small part of the water. It will be seen, further, that the dome must contain air, which by its elasticity raises the water in the discharge pipe. Anything that causes the dome to empty of air will stop the machine.

The proportion of water that a machine will raise depends upon the ratio of head to height of discharge. In the instance given a hydraulic ram, if the water is given a fall of three feet, should be able to discharge at a point 50 feet above it about 3½ gallons of water per minute.

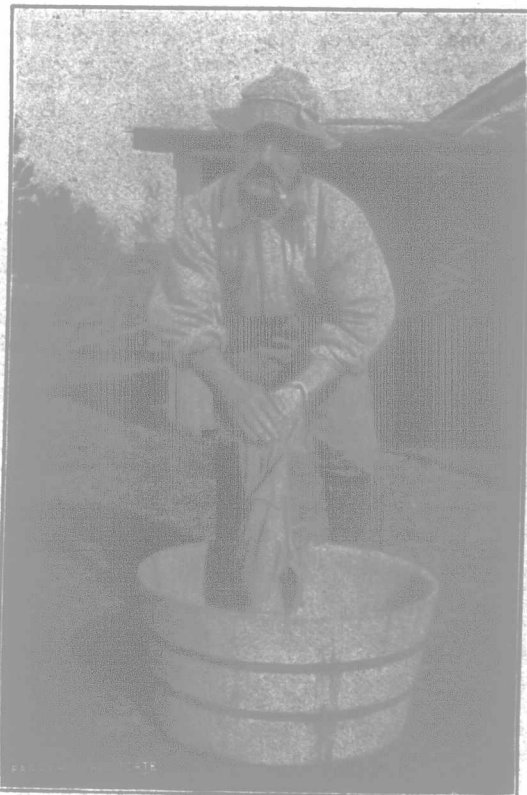
The refuse in the water supplied would require to be prevented from entering the machine. We do not know how this could be done, except by a coarse filter at the mouth of the supply pipe. The hydraulic ram is manufactured by R. McDougall Co., Galt, Ontario.

J. B. REYNOLDS.

A CREAMERY QUESTION

Seeing a question in your December 1st issue from A. B., re pounds of butter-fat for pounds of butter, called my attention to my last year's monthly statement card, with which I have been dissatisfied. Enclosed find statement, and please state if it is correct:

Cr.—	Pounds of milk, 3,950; test, 3.4; pounds fat, 184.3; price, 19.71c.; gross amount,	\$26.47
	Dr.—	
	Drawing, 3,950 pounds; price, 10c.; amount,	\$26.47
	Net payment	\$22.52
Lambton Co., Ont.		R. S. T.



Chores in Assiniboia.

Ans.—The patrons of a creamery should first be clear on the difference between butter and butter-fat. Butter consists of all the fat in combination with other substances. Butter-fat is a single substance. 184.3 pounds of butter-fat is all that could be recovered from 3,950 pounds of milk that tested 3.4% fat, and if 19.71 cents was the price of butter-fat agreed upon between patron and maker, the statement was quite correct, 19.71 cents, however, is a very low figure for butter-fat at that particular date. On August 1st we quoted butter 16 to 18 cents from farmers' baskets in Toronto, and on this basis creamery butter should have been worth at least 19 to 20 cents per pound. If then creamery butter was worth from 19 to 20 cents, butter-fat should have been worth from 24 to 25 cents per pound. The using of the terms butter-fat and butter indiscriminately and conjunctively has given rise to no end of confusion and misunderstanding, and in many cases has afforded unscrupulous makers an opportunity to resort to dishonest methods of computation.

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EVENTS OF THE WORLD.

Sir Sanford Fleming at Ottawa exchanged New Year's greetings with Premier Seldon, of New Zealand, over the Pacific cable.

The construction of a steamer 755 feet in length, or 30 feet longer than the Baltic, the largest ship in the world, is to begin immediately at Belfast, Ireland.

A new automobile train, which runs without rails, has been successfully tried in Paris, in the presence of an immense crowd. The train carried sixty passengers in five wagons, and several tons of ballast.

Last year 619,980 immigrants arrived at New York, as compared with 547,157 in 1902, an increase of 72,823. This is exclusive of the three last days of the year. This migration of largely illiterate people from Central Europe must affect the standard of American citizenship.

The Pan-American Railway Co., whose headquarters are at Guthrie, Okla., with capital stock of \$250,000,000, to build a line from Port Nelson, on Hudson's Bay, to Argentine Republic, was chartered on the 30th of December. The total length of the prospective road, which will pass through Winnipeg en route to the south, will be 10,000 miles.

The Rockefeller capitalists and Henry Clay Frick have assumed absolute control of the U. S. steel corporation, thus supplanting Morgan, Perkins, Carnegie and Schwab. The methods employed in the Standard Oil concern will be employed in the management of the steel trust, which is to be conducted on an entirely different basis to that of the past. The first move will be to lessen the salaries of the men who are drawing from \$12,000 to \$25,000 a year.

Dr. L. J. Lemieux, of Montreal, who returned recently from the Pasteur Hospital in Paris, makes this interesting announcement: "There cannot be any doubt but Dr. Marworek, of the Pasteur Institute at Paris, has found a positive cure for all tuberculous diseases. The treatment calls solely for the injection of serum discovered by Dr. Marworek; and during my stay at the Pasteur Hospital I witnessed twenty-five cures by the treatment." Patients will be treated according to the new method at an early date in Notre Dame Hospital, Montreal.

The provisions of the Preferential Tariff Bill, recently passed in New Zealand, give strong promise of bringing about lucrative trade relations between that country and Canada. The bill practically prohibits the importation of United States manufactures, and the New Zealanders are looking to Canada for many of the articles with which they have been hitherto supplied by Uncle Sam. Already letters have been received by the Canadian Manufacturers' Association, making enquiries for buggies, wagons, saddler's tools, agricultural machinery, boots and shoes, and many other articles. This promises to be one more open door through which profit may pour into Canada's coffers.

After examination of the B. C. coast, Lord Dundonald, Chief of the Canadian Militia, states that Canadians need have no apprehensions that Fort Simpson will ever, in the event of war, be rendered useless as a port by reason of guns directed from the two small islands lately ceded to the Americans. "The only power," he said, "which can shut up Fort Simpson will be the power that commands all the sea approaches to it." This should effectually silence those who have been alarmed at the statement uttered by Senator Turner, of Washington, that the United States commanded the proposed terminus of the Grand Trunk Pacific.

The terms of agreement proposed to Russia by Japan have been at last made public. The chief propositions are: (1) That Japan and Russia shall respect the independence and territorial integrity of both the Chinese and Korean Empires. (2) That neither Japan nor Russia shall interfere with the commercial rights already acquired by these nations in China or Korea. (3) A mutual recognition of the special interest of Japan in Korea, and Russia in Manchuria. Northern Korea is really the immediate bone of contention in the disturbance. It is held by Russia that a portion of this area, owing to certain commercial considerations, should be neutral ground. Japan insists that Korea shall be treated as a unit. The propositions advanced by Japan are, however, regarded as very reasonable, and some hope is expressed that an amicable settlement may result. That King Edward is bringing pressure upon the Czar in favor of peace is looked upon as an auspicious sign. Nevertheless, preparations are still going on ceaselessly, and no one can tell what a day may bring forth.

Considerable attention has been directed to the Isthmus of Panama, now an independent republic. The "Panamanians" have been dissatisfied with the Government at Bagota, and the failure of the Legislature to ratify the treaty with the United States, by which the latter country was to obtain possession of the canal.