

RS ADN

defined as the resistance in contact. If one smoothest of metal microscope, he will find projections extending over it assumes the rough. When two surfaces these tiny projections on the surfaces are with a resulting wear eater the pressure the projections interlock comes the wear. This relation between the and the force required lled the "Co-efficient

ce of resistance to a object of lubrication. surface from coming t and prevent the ns from interlocking, d grinding down with to place something smoother substance. lubricant. It must sufficient tenacity to cushion between the es. It must spread body of oil of equal out, and must be of a intain its body under

es not totally over- here is still a fluid nce to movement by

and a lubricant which the conditions under used. In the main, be governed by four weight of the moving with which it moves; ture of the bearing arance between the ht of the moving nce because the oil weight and keep the e oil is too thin it ed out from between and they will then motion, grind and

which the bearing importance, and must eration in connection n of the oil. It will ed that if the fluid is so little that the l is faster than that ce, the oil will flow urface exposed. On e fluid friction of the e movement of the that of the moving offer resistance, and required to overcome

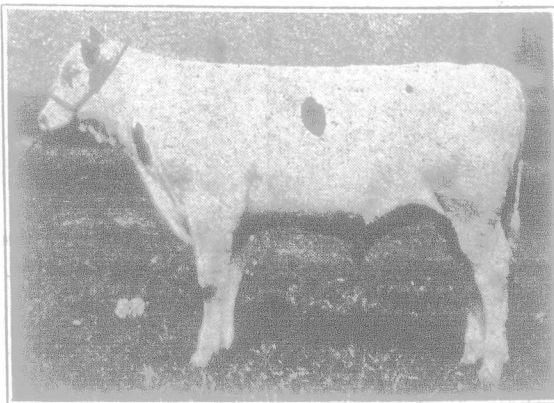
gh speed work, this of great importance. o heavy might cause e greater than the surfaces would be ed to rub together The temperature of is of importance for ecause all lubricating eing heated. An oil eavy at 70 degrees ery thin when heated at which an engine w temperature the oil l not flow properly, on. If when heated it will not hold the t, but will flow out d permit the moving er. Obviously, there- ndergoes the least xtremes of operating ing the least upon icken the least at e temperature, is the e engine, because its e temperature and at ore nearly the same.

why temperature is cause all lubricating the temperature pre- ution chamber and yinder head. It is, the oil which upon st residue, or carbon, best oil to use. The

Buy Your Holsteins in Oxford County, Ontario

"THE HOLLAND OF AMERICA"

We have selected this year for our annual fall sale seventy-five of the choicest things we have ever offered at any of our thirteen semi-annual club sales. These are consigned by the same breeders that have made the Oxford sale the outstanding club sale in all Canada. At the recent Canadian National Exhibition, Oxford County herds won 75 per cent. of all prizes awarded to the breed, and at London, the week following, only two ribbons in the whole show went to herds outside Oxford County. These herds produce show individuals, and also combine production. Oxford County herds at present hold the Canadian championship for yearly production in both the three-year-old and the four-year-old class; second place in the



Sir Francy Netherland

Oxford County bred and owned. Junior Champion Holstein bull at Toronto and London Exhibitions, 1920.

Auctioneers:
MOORE, DEAN, PULLIN

GEORGE C. CURRIE, SEC., INGERSOLL, ONT.

two-year-old class, and fourth place in the mature class. The first 33-lb. cow in Canada was also Oxford bred and owned. Much of this same blood is strongly represented in this sale, and of the fifty-three females selling nearly all are young cows, either fresh or near freshening at sale time. The 22 young bulls include a number of real herd sire prospects. If you want Holsteins bred for type and production come to

WOODSTOCK, ONTARIO,

Wednesday, Dec. 15, 1920

FOR CATALOGUES ADDRESS:

President:
A. DUNN, Ingersoll

Manor Farm Holsteins

A Producing Herd Where Quality Excels

I have at present just the bull calf you need for your next herd sire. Visit Manor Farm yourself and select him from the choice lot of youngsters now in the pens—all are sired by our great son of Lulu Keyes, King Korndyke Sadie Keyes. The records of the dams of these calves we would like to show you run from 20-lb. two-year-olds to almost 35 lbs. for matured cows—quality and production considered, they are priced exceptionally low.

GORDON S. GOODERHAM, Manor Farm, Clarkson, Ontario

Silver Stream Holstein Herd Sires

WE BREED FOR YEARLY PRODUCTION

We have at present several choice young bulls, nearly all of which are sired by our own herd sire, King Lyons Colantha, whose six nearest dams average 30.10 lbs. of butter for 7 days. These youngsters are all from good yearly record dams and great individuals—probably as strong a lot as we have ever bred. Come and see us also for females.

JACOB MOCK & SON

TAVISTOCK, ONTARIO

"Premier Holstein Bulls Ready for Service—I have several young bulls from dams with 7-day records up to 32.66 lbs. of butter, 755.9 lbs. milk, with 110 lbs. milk in one day—over 3,000 lbs. in 30 days. All are sired by present herd sire, which is a brother to May Echo Sylvia. Step lively if you want these calves.

H. H. BAILEY, Oak Park Farm, PARIS, ONT.

clearance between the surfaces is of importance, because if there is very much clearance, and the oil is too thin, it will run out, permitting the metal surfaces to come together. If there is only a small clearance, and the oil is too thick, it will not flow freely between the surfaces, and there will be dry spots which will rub together. Especially does the question of clearance become one of prime importance when considering a lubricant for the piston, for compression depends upon the lubricant, and the efficiency of the engine depends in a large measure upon compression. When the piston is fitted into the cylinder there is usually a clearance between the wall of the piston and the wall of the cylinder about equal to the thickness of a piece of paper. This space must be sealed absolutely air-tight by the lubricating oil and the piston rings.

On the first down stroke of the cycle—the intake stroke—a partial vacuum is created in the combustion chamber above the piston. This has a tendency to suck the oil out from between the piston and the cylinder, past the piston rings and into the combustion chamber, consequently the oil must have sufficient adhesiveness to cling to the cylinder wall and withstand the suction power of the vacuum. The amount of oil which is drawn into the combustion chamber will depend upon the number and fit of the piston rings, and the character and quality of the oil. The next up stroke of the piston is the compression stroke, and its value also depends upon the effectiveness of the piston rings and upon the sealing qualities of the lubricant. When the piston is at the bottom of the intake stroke the valves are closed, and the only way in which there can be a loss of compression on the up stroke is through improperly fitted valves, improperly fitted piston rings, or because of poor lubrication.

It is clear that if the gas is permitted to escape, either through the valves or past the piston, there will be no force to the explosion; the effectiveness of the power stroke being decreased in exact proportion to that of the gas which escapes during the compression stroke. Furthermore, when the explosion takes place the consequent expansion of the gases therefrom produces the power to drive the

RAYMONDALE FARMS

Our Junior Herd Sire, King Korndyke Raymondale

"One of the best bred bulls of the great Holstein breed." His sire, Avon Pontiac Echo, is one of the most noted sons of the world's greatest cows, May Echo Sylvia; while his dam, Korndyke Queen De Kol 6th, is three times a 30-lb. cow, and twice a 35-lb. cow—her best 7-day record being 37.26 lbs. of butter and 781 lbs. of milk. She has 3,101 lbs. of milk and 180.9 lbs. of butter in 30 days, and 10,125 lbs. of milk in 100 days. The dam and sire's milk, 100.35 lbs. of butter in 30 days, and 3,682.55 lbs. of milk for one day. He is a splendid individual, and is proving himself a great sire. Let us send you particulars regarding the few bull calves we have by this young sire. All are from good record dams in our own herd.

RAYMONDALE FARMS
Vandreuil, Que.

D. RAYMOND, Owner
Queen's Hotel, Montreal

Hamilton House Holstein Sires

Our young bulls of serviceable age have all been sold, but we have a number of the best young calves we have ever bred. All are from dams with good combination records for both milk and butter. Several are up to 700 lbs. of milk and 81 lbs. of butter for 7 days. If you are interested in a good calf, write or see them now—they can be purchased at considerably less than we will be pricing them next winter.

D. B. TRACY

All Railways
Bell Phone

COBOURG, ONT.

For Sale—Hill-Crest Rauwerd Vale, 4 years old, our herd sire whose 26,000 lbs. of milk and 1,050 lbs. of butter in one year. Am keeping all his heifers in the herd. Also young bulls sired by him. Will sell one or two cows.

W. FRED FALLIS, R. R. 3, Millbrook, Ont.

40 HIGH-CLASS HOLSTEINS

IN UNRESERVED
BREEDERS' SALE

A Real Choice Offering of Well-bred, Untested Holstein Females.
Selling at FAIRVIEW FARM, near

Dunnville, Ont., Saturday, Dec. 11th, 1920

We are cataloguing for this sale forty of the very best females we have, and in three or four instances only are there cows above five years of age. At least twelve will be fresh or near freshening by sale date; others are bred to freshen in early spring, and the remaining numbers are made up of unbred youngsters. Five of these are daughters of the great young herd sire, Elmcresc Pontiac Sylvius, who is owned jointly by Mr. Shaver and Mr. Moote.

Elmcresc Pontiac Sylvius, the sire of these heifers, is got by

In addition to the Holsteins there will also be sold a matched span of Registered Shire Mares (4 and 5 years old), and a Sharples two-unit milking machine.

NOTE.—The cattle will be sold subject to the tuberculin test if purchaser so desires. Those attending the sale are also assured that the sale will be over in plenty of time to allow every one to catch the evening train at Dunnville, where it is possible to make close connections for almost any point in Western Ontario, and arrive there that evening.

All requests for catalogues should be addressed to
JOHN. W. MOOTE, Canboro, Ont.

All trains met at Dunnville on morning of sale.
Owners, JNO. W. MOOTE, M. B. SHAVER
Auctioneers, MOORE, MONTAGUE. Sales Manager, C. T. HOUCK



be in the neighborhood of twenty females selling that are bred to him, which means that practically every female that is bred is carrying a calf which will be sired by a 29-lb. grandson of May Echo Sylvia. There are also 14 daughters of King Johanna Netherland and 4 daughters of Orvilla Helbon Prince listed.

engine. If the valves are tight, the rings properly fitted, and the seal is maintained by the lubricant between the piston and the cylinder, none of the force (which should be used to drive the engine) will be lost through leakage.

The troubles resulting from poor compression are well known to every experienced operator, and are generally manifest in hard starting and in loss of power. From the foregoing it will be readily appreciated that if there is a clearance of 4/1000 of an inch between the piston and the cylinder a heavier, more tenacious oil will be required than if there is only one-half that amount of clearance.

The lightest oil which will maintain the piston seal is the best oil to use. It must be fluid enough to spread over the wearing surfaces quickly, leaving no dry spots. It must reach all the close fitting bearings and be free to move with very little resistance to motion. Experiments have proven that oil which is too heavy gives rise to higher temperature in the cylinder walls, and consequent higher temperature to the water in the radiator.

However, if coal oil is used for fuel, heavier oil is required than if gasoline is used, because there are times (such as sudden load changes or light load) when some of the coal oil which is taken into the combustion chamber is not burned. This unburned fuel then mixes with the lubricating oil and thins it out, and unless the right lubricating oil is used it will thin so much that not only will the oil seal be broken, but the lubricant may be almost entirely washed off the piston and cylinder walls, even causing the piston rings to seize or score the cylinder.

The water used so generally in kerosene tractors also has a tendency to destroy the oil film on the piston and cylinder walls. This is especially true when too much water is used or when lubrication is not correct, and often results in cylinder scoring and piston ring breakage.

However, there is a limit to the sealing property of any lubricant. When the piston rings become too much worn or when the cylinder has been scored, or worn at one spot, the only remedy is ring replacement or cylinder reboring.—From "Correct Lubrication for the Farm."