

GROCERIES AND MEATS



Oh! Ham

We don't sell just "Ham." We sell Armour's "Star." The ham of hams—"The Ham what am."



JAS. GRAHAM

"ON THE CORNER"

You Can
Save Money by
Trading at
Colburn's Cash Store



Wallace's Transfer Line

Household goods moved promptly and transfer work solicited. Phone 1 Frank Wallace, Prop'r.

Why Let Another Man Choose Your Cream Separator for You?

A CREAM SEPARATOR is a machine that ought to last for years, giving perfect satisfaction. Some of them do, but many of them don't. So it's best to learn for yourself what a separator will do before you pay out your good money for any particular kind.

AND FURTHER, Don't for your pocketbook and back's sake, let a man FORCE a particular separator on you, just because he has only that ONE KIND to sell. Be square with yourself and investigate.



THE EMPIRE LINE

of Highest Quality Separators, which you can find at our place.

We have THE IMPROVED FRICTIONLESS EMPIRE and THE CENTER FEED EMPIRE DISC

representing both of the really good actually standard methods of separation. You will find a full range of sizes and capacities in each style.

We are merely Demonstrators

You do your own Choosing

For Sale by W. E. Spencer, Alliance, Neb.



Agent for West. Neb.

Another Good LAND OFFERING

On May 22d the Government will open its second tract of 12,000 acres of perfectly irrigated land in the Big Horn Basin, near Garland and Powell, Wyoming. This irrigation project of the Government is first-class and reliable. This land is adjacent to and along side of the Burlington road. Powell and Garland are prosperous towns. The community is absolutely first-class, and there is not a better place to live in the whole west for climate, sunshine, productivity of soil and many other good reasons, than the Big Horn Basin. This land is \$45.00 an acre in ten annual installments, without interest.

320-ACRE MONDELL ACT:—Select locations for homesteading in Wyoming near Newcastle, Upton and Moorcroft. Plats on file. Write me.

I conduct an excursion on the first and third Tuesday of each month. Have your friends back east write me at once about this new tract. The excursion of May 18th or in June will be the time for good selections.



D. CLEM DEEVER,

GENERAL AGENT

Land Seekers Information Bureau, Omaha, Nebr.

SPECIAL! Mikado Economy Steel Range with Reservoir, High Warming Closet, 16-inch oven **\$32.00**

Also Malleable and Round Oak Steel Ranges

Newberry's Hardware Co.

Al Wiker

AGENT FOR

Grand Island Granite and Marble Works

All kinds of Granite and Marble Tombstones and Monuments. Lower prices and less freight than from firms farther east

Wm. James, Exclusive Dealer in

COAL & ... WOOD

'Phone Alliance, No. 5. Nebraska.

A. D. NEW AUCTIONEER ELLSWORTH, NEBR.

Col. New has had 25 years' experience and is one of the most successful auctioneers in the northwest. Dates made at this office



When a Plumber is Needed

send for us. We have plenty of time now to attend to your plumbing. This is not our busy season and it will pay you to have your

PLUMBING, HEATING, FITTING, etc., attended to now before the rush of work begins. We are thoroughly posted in our business and an order from you will promptly put all our knowledge and skill at your service. The cost will not be great.

Fred Brennan

Public Stenographer

Commercial Club Room Basement Phelan Opera House Bldg.



FOR SALE BY

F. J. Brennan

Home Course In Modern Agriculture

XIII.—How Animals Grow

By C. V. GREGORY,
Agricultural Division, Iowa State College

Copyright, 1909, by American Press Association

ANIMALS, unlike plants, can obtain none of their food from the soil, air or water, but must have it prepared for them. Without plants there could be no animal life, since animals are dependent upon them, either directly or indirectly, for food. A study of the way animals make use of this food in building up their bodies will help us to better understand the principles of feeding.

There are three main constituents of feeds—fats, carbohydrates and albuminoids, or protein. The fats are made up of carbon, hydrogen and oxygen. The carbohydrates, of which starch and sugar are familiar examples, are

made up of the same elements put together in different proportions. Another of the carbohydrates is cellulose, or the woody fiber of plants. This is hard to digest, but some of it is used in animal growth. Albuminoids contain not only carbon, hydrogen and oxygen, but nitrogen also. In addition to these three constituents of food it also contains some mineral elements, which are commonly referred to as ash.

This ash is used in building up the bones, hair, horns and hoofs. The al-

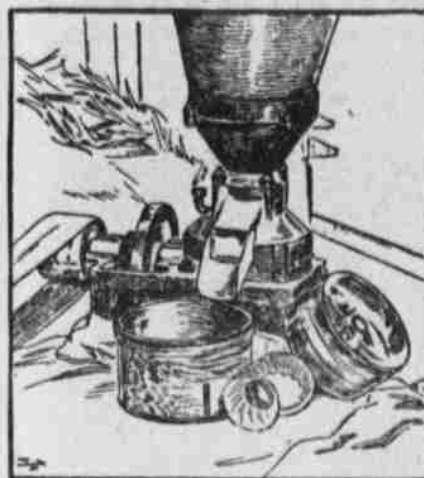


FIG. XXV.—GROUND FEED IS DIGESTED MORE QUICKLY AND COMPLETELY THAN WHOLE GRAIN.

buminoids also form a considerable portion of these parts of the body. Their chief use, however, is in building up the muscles, tissues and various organs. The fats and carbohydrates are used to furnish energy and heat. They are the fuel of the body. By uniting with oxygen they give off the heat and energy required to keep the body running, in much the same way that the elements of coal or wood unite with oxygen to furnish heat and power when burned in a steam engine. Not all of the fats and carbohydrates are burned immediately, however. Some of the fats go to build up fatty tissues. Some of the carbohydrates are changed to fats and used in the same way, and some are stored in the liver in the form of glycogen to be used when needed.

Before these various food elements can be used by the animal they must go through a process called digestion. The first step in digestion consists in taking the food into the mouth. Each class of animals has a different way of doing this. Watch the cows feeding in the pasture. They reach out their long tongues and gather in a mouthful of grass, breaking it off with a peculiar twist as it comes against their lower teeth. They cannot bite it off, since they have no upper teeth in front. The horse gathers in the grass with his lips and bites it off between his teeth. For this reason horses can eat grass down much closer to the ground than cattle can.

After the food is taken into the mouth it is chewed and mixed with saliva. This saliva serves two purposes—to moisten the food and to change some of the starch to sugar. This change is brought about by the action of enzymes which the saliva contains. These work in the same way as do the enzymes in a germinating seed, which prepare the food for the little plant.

Sugar and starch, as we have learned, are both composed of carbon, hydrogen and oxygen, the only difference being that they are put together in a little different way. The action of the enzymes changes the relation of these elements in the starch, arranging them in such a manner as to form sugar.

All the starch in the food must be changed to some form of sugar before it can be used by the animal in building up the various parts of its body. Since the food remains in the mouth only a comparatively short time, however, only a small part of the starch can be acted upon there. The rest is changed later, as we shall see.

The main purpose of the saliva is to moisten the food. This moistening, together with the chewing, reduces it to a moist, finely divided mass, ready to be swallowed and acted upon by the other digestive juices.

While the essential processes of digestion are the same for a horse, a cow, a pig, a chicken, or a man, the way in which the work is carried on varies somewhat. The horse and the hog have but one stomach. As the food enters this a churning motion begins, which gradually forces the partially digested mass along toward the lower end. The saliva continues to act on the starch, and another fluid, the gastric juice, is poured

out from the walls of the stomach. The main duty of this gastric juice is to change the albuminoids into a form in which they can be absorbed and used by the animal.

Cattle and sheep have a very large stomach, which is divided into four parts. Animals of this kind are called ruminants. When the food is swallowed it passes into the first stomach, which serves the purpose of a storehouse. Here the action of the saliva continues, and the water which the animal drinks softens the food to a considerable extent. After a time the food passes into the second stomach, which forces it back to the mouth, a little at a time. Here it is chewed thoroughly. You have often seen cows lying in the shade "chewing their cud." This cud is the food that has been sent up to the mouth by the second stomach.

After being chewed the food is swallowed again. This time it passes directly through the first stomach to the third. Here it becomes still further softened, finally passing into the fourth or true stomach. The function of the first three compartments is simply to prepare the food to be acted upon by the true stomach.

After leaving the stomach the partially digested food passes into the small intestines. Here it is acted upon by three fluids—the bile, pancreatic juice and intestinal juice. The chief use of the bile is to digest the fats, making them into a sort of a soapy fluid, in which form they are ready to be absorbed into the blood.

Both the pancreatic and intestinal juices act upon the remaining starch, completing the change into sugar. The pancreatic juice also completes the digestion of the albuminoids, in which work the intestinal juice may also take a small part. Another work of the pancreatic juice is to assist in decomposing the fats. The intestinal juice breaks cane sugar up into simpler sugars, such as glucose.

After the food has been digested the usable portions are ready to be absorbed into the blood. Digestion has changed the fats, proteins and starches into a form in which they are soluble. In this fluid state they pass through the walls of the stomach and intestines and are emptied into the blood.

The blood is taken to all parts of the body by the arteries, which subdivide to form tiny capillaries. These are so small and close together that a pin prick on the skin anywhere will pierce some of them. There are two main parts to the blood—the fluid of plasma and the red corpuscles—which give it its color.

Each part of the body selects from the blood the food materials which it needs. Thus the bones will take ash, while the muscles will take protein, to build up their worn-out parts. The waste, broken-down parts are burned, together with as much fats and sugars as are needed, to furnish heat and energy. All through the body there are thousands of little fires. To keep these fires going oxygen is used, and carbon dioxide is given off in the same way that a fire in a stove takes in oxygen through the lower draft and sends carbon dioxide up the chimney.

In the body the corpuscles supply the oxygen and carry away the carbon dioxide. The other waste materials, or ashes, are gathered up by a system of vessels called lymphatics, which empty into the veins. These veins carry the blood back to the heart. The change of the contents of the corpuscles from oxygen to carbon dioxide changes the color of the blood from a bright red to a much darker shade.

From the right side of the heart, to which the blood is brought by the



FIG. XXVI.—SUPPER TIME.

veins, it is sent to the lungs, where the corpuscles exchange their carbon dioxide for oxygen and are ready for another trip through the body.

Since oxygen plays such an important part in keeping up the fires that supply the body with heat and energy, it is just as important that the animals be well supplied with fresh air as it is that they have enough food. In the winter especially the stables are often closed so tightly in the attempt to keep them warm that the air becomes very deficient in oxygen. In consequence the work of the body is delayed and the general health suffers. By having ventilators in the roof, together with plenty of windows at such a height that the draft will not blow directly upon the animals, fresh air can be admitted and impure air drawn off constantly.

Miss M. Ruth Taylor

TEACHER OF PIANO

416 Niobrara Ave. Phone 381

DR. C. L. WEBER

DISEASES OF

Eye, Ear, Nose and Throat

SCIENTIFIC REFRACTION

DR. G. W. MITCHELL,

Physician and Surgeon Day and night calls. Office over Bogue Store. Phone 150.

H. A. COPSEY, M. D.

Physician and Surgeon

Phone 300

Calls answered promptly day and night from office. Offices—Alliance National Bank Building over the Post Office.

DR. CHAS. E. SLAGLE

WITH

DR. BELLWOOD

Special Attention Paid to Eye Work

GEO. J. HAND,

HOMEOPATHIC

PHYSICIAN AND SURGEON

Formerly Intern Homeopathic Hospital University of Iowa.

Phone 251. Office over Alliance Shoe Store. Residence Phone 251.

DR. C. H. CHURCHILL

PHYSICIAN AND SURGEON

(Successor to Dr. J. E. Moore)

OFFICE IN FLETCHER BLOCK

Office hours—11-12 a.m., 2-4 p.m., 7:30-9 p.m.

Office Phone 62

Res. Phone, 85

Drs. Bowman & Weber

PHYSICIANS AND SURGEONS

First National Bank Bldg. Rooms 4-5-6

Office hours, 10 to 12 a. m.,

1:30 to 4, 7 to 8 p. m.

Office Phone 65 Res. Phone 16 & 194

Drs. Coppernoll & Petersen

OSTEOPATHIC PHYSICIANS

(Successors to Drs. Frey & Balfe)

17 and 18 Rumer Block

Office Phone 43. Residence 20

Phone 492

AUG. F. HORNBERG

Private Nurse

Office Phone 498

RES. PHONE 207

ALLIANCE, NEBR.

WILLIAM MITCHELL,

ATTORNEY AT LAW.

ALLIANCE, NEBRASKA.

EUGENE BURTON

Attorney at Law

Office in rooms formerly occupied by R. C. Noleman, First Nat'l Bank Bldg

Phone 180. ALLIANCE, NEB.

H. M. BULLOCK.

Attorney at Law,

ALLIANCE, NEB.

WILCOX & BROOME

LAW AND LAND ATTORNEYS.

Long experience in state and federal courts and as Register and Receiver U. S. Land Office is a guarantee for prompt and efficient service.

Office in Land Office Building, ALLIANCE, NEBRASKA.

THE GADSBY STORE

Funeral Directors and Embalmers

FUNERAL SUPPLIES

OFFICE PHONE 498

RESIDENCE PHONES 207 and 510

GEO. W. MILLER

GRADUATE

PIANO TUNER

Repairing a Specialty

Phone 605 507 Sweetwater Ave.

J. N. STURGEON S. G. YOUNG

Sturgeon & Young

DRAY LINE

(Successors to G. W. Zobel)

Office Phone 139.

Residence Phone 142.