When you hear the New Year
Knocking at the door,
Which, of all your wishes,
Would you ask him for,
If he said he grant you
One and just no more?
When you hear the New Year
Knocking at the door.

When you hear the New Year
Knocking at the door,

Would you ask for Money
Heaped in golden store?
Remember old Carnegie,
Who says that wealth's a bore,
When you hear the New Year
Knocking at the door.

When you hear the New Year
Knocking at the door,
Would you wish for Power,
Like monarchs held of yore?
See the Czar of Russia,
Bombarded, aft and fore,
When you hear the New Year
Knocking at the door.

When you hear the New Year
Knocking at the door,
Make the wish that's best of all,
Be what may in store—
'Tis to keep the old friends,
Beloved of your heart's core,
When you hear the New Year
Knocking at the door.

John S. McGroarty.

Romance of the Year

Time Civil, Ecclesiastical and Astronomical—Date of New Year Variable—Equinoxes Alone Constant—Customs of New Year's Observance In Ancient and Modern Times.

At this time we celebrate the birth of the New Year and erect another milestone on the road of Time. How few think that 152 years ago the year at this season was old. How came the change? Not by the revolution of the earth, for that is practically unchangeable, but through the intervention of human enactment. Though time, as measured by the motions of the earth, may be taken as constant, yet its divisions into seconds, minutes, hours, days, weeks, months, years, eras, their beginnings and endings, are arbitrary products of the human mind, and therefore variable.

All nations and people have a particular epoch from which they date the era in which they may have lived. The Romans dated their chronological events from the founding of the city. The expression, "The year of Rome," or the letters A. U. C. (ab urbs condita) refers to that particular epoch. The Mohammedans express their sequence of time by "the year of the prophet." The date is from the Hejira, or the flight of Mohammed from Mecca (Hejira is pronounced Hej-i-ra, and is an Arabic word meaning flight), which occurred A. D. 622. The Jews reckon their dispensation from the creation of the world, but in reality their chronology begins with the Exodus. Moses intentionally introduced a new calendar, and makes Abib their first month. It has been supposed that the Jewish Sabbath is the same as the seventh day on which God ended His work, but as Moses changed the first month to Abib, he changed the first day also. The first day of this new year was the first day of the first month and the first day of the first week. The Sabbath being held on the seventh day, it must of necessity have been changed also. But being changed, it could not be in correspondence with the seventh day of creation on which God "rested." Christians date their epoch from the birth of Christ, the expression for which is the Latin words Anno Domini, or A. D., the initial letters of the words. Five centuries elapsed before an attempt was made to authoritatively fix the date of the Nativity. This was then undertaken by Dionysius Exiguus (little), who fixed our present chronology. It is now generally allowed that he was four years out in his reckoning, and that B. C. 4 is the correct year. This corresponds with the statement by Ireneus and Tertullian that Christ was born about the year of Rome 751.

Different nations have begun their count of time at different parts of the twenty-four hours. The ancient Accadians, Babylonians, Syrians, Persians, the modern Greeks and the inhabitants of the Balearic isles reckon their day from sunrise to sunrise. Why the ancient nations began the day at sunrise is evident from their early religion, which was Magism. Fire was a chief object of reverence with them, and the sun as the grand symbol of their worship received especial veneration. Hence they began their day as they began their devotions—with the rising sun.

Others, like the Athenians, the Chinese and the Jews have counted the day from sunset to sunset. Why the Jews begin the day from sunset is potent from their religion. The characteristics of the Jewish religion are in sharp contrast to those of other nations. The aim of Moses was to wean them from the grossness of oriental religions. Hence the contrasts and antitheses. If the worshipers of the elements begin the day with sunrise, then the followers of Jehovah will begin theirs with sunset. Moses can have no concord with error.

The Egyptians and pagan Roman priests began their day at midnight. Most European nations follow the same rule. Americans have also adopted the custom. Astronomers, however, begin the day at noon, when the sun is on the meridian.

The day, meaning thereby light, from sunrise to sunset, was in ancient times divided into twelve equal parts, called hours. A similar division was observed with the night. Thus it will be seen the hour was constantly changing in its duration. The hour of the day in winter, when the days were short, was much longer than in summer, and vice versa. The same, of course, was the case with the nights, also. So that only at the equinoxes were the two series of hours equal. This was most inconvenient and resulted in much confusion.

To Hipparchus, a Greek philosopher, who flourished about B. C. 150, must be given the credit of dividing the day from midnight to midnight into twenty-four hours, or two equal portions of twelve hours each. This system prevails generally at the present day. But astronomers count continuously for twenty-four hours.

The week, as all know, consists of seven days. Christians and Jews hold this division because God created the heaven and the earth (the solar system) and primordial forms of life in six days, and "rested" on the seventh. But it would seem that pagan nations selected seven days because of the seven planets known to them, after which they called the days. The sun and moon were included in the planets. They were: Sun, Mercury, Venus, Moon, Mars, Jupiter, Saturn. We call three days of the week directly after the planets—Saturday (Saturn), Sunday (Sun), Monday (Moon), and four through the Saxon names for the others: Tuesday (Tuesco—Mars), Wednesday (Woden—Mercury), Thursday (Thor—Jupiter), and Friday (Friga—Venus).

The month, no doubt, originated from the phases of the moon. These, sharp and well-defined, are four in number: the new moon, first quarter, full moon and last quarter. Each of these phases occupies about seven days, so that from new full moon to new full moon, there is something more than twenty-nine days, which is called a synodical month, or lunation.

No nation up to the present time has devised a system of absolute accuracy in the measurement of the solar year. Some ancient nations, such as the Chaldeans, reckoned the year as 360 days. This is the principle of that most ancient astronomical term, the Zodiac. The Zodiac is a belt encircling the heavens on each side of the ecliptic, within which the planets known to the ancients always revolve. It extends eight degrees on each side of the ecliptic. It is divided into twelve equal parts, called signs of the Zodiac. It is a great cycle, and is divided into 360 degrees, like all circles; hence 360 days in the Chaldean year.

The Egyptians counted 365 days in their year. As the year contains 365¼ days nearly, such systems could not fail to work great inconvenience, for the seasons would move round in a cycle from one time of the year to the other. Let me make this quite plain. Take the winter solstice, for instance, which happens on Dec. 21. At the end of four years the solstice would be not on Dec. 21, but on Dec. 22. The sun would be behind time. In order, therefore, that the seasons should occur at the same time in the civil year, it was necessary to take account of this fraction of a day.

Julius Caesar, the great Roman emperor, determined to rectify the error. He called the celebrated Egyptian astronomer, Sosigines, to his aid. Sosigines suggested the addition of a day every fourth year. This day was added to February, and is known to us as "Leap Year," but to the Romans as Bissextile (Bis, twice, sextus, sixth).

This corrected calendar became known as the Julian. But as it made the year consist of 365 days, 6 hours, it was in excess of the actual time by 1 minute 10.3 seconds. Small as was this fraction, it accumulated to about one day in every 134 years.

The calendar needed reform. Time, civil and ecclesiastical, required readjustment. But to urge the necessary change was dangerous, as the learned Friar Bacon found to his cost. For pointing out errors in the calendar he received as a reward for the advocacy of the truth a prison, where he remained ten years.

As often happens, ecclesiastical requirements minister to civil necessities. The immediate cause of the correction of the calendar was an error in the time of observing the Easter festival. The Council of Nice, in A. D. 325, decreed that Easter is the Sunday following the full moon, next after the Vernal equinox. Owing to disputes arising from this decree Pope Hilarius, in 463, ordered that the paschal moon should not be the actual full moon, but an ideal one, falling on the 14th day of the moon by the metonic cycle (so-called from Metoni, a Greek philosopher, who discovered it. It consists of nineteen years, at the end of which the sun is in about the same position he was at the beginning).

In 1582 it was found that the real equinox fell ten days before the nominal one, and from the error in the Metonic cycle, Easter had got four days wrong. Then Pope Gregory XIII reformed the calendar, called after him the Gregorian calendar, by the aid of Clavius, a learned Jesuit. The equinox of 1582, which should have fallen on March 21, fell on March 11. Gregory cut the Gordian knot by decreeing that Oct. 5 of that year should be counted as Oct. 15.

To the question, What is time? We may give the answer, duration, as measured by the solar system. For everyday purposes and artificial divisions mechanical contrivances are necessary.

The first method of measuring time, as far as we know, was by means of the obelisk. The pyramids of Egypt very probably answered the same purpose. Josephus states that Moses erected, at Heliopolis, in Egypt, a pillar for such purposes. "The cloudy pillar" that accompanied the Israelites in their forty years' wanderings in the wilderness, and which was a "pillar of fire by night," most likely answered the same purpose. Pliny states that an obelisk, now on the Thames embankment in London, and known as "Cleopatra's Needle," was erected by Mesophres about B. C. 1700, likely for similar uses. We all know, I hope, the reference in the Bible to the sundial of Ahaz, about B. C. 740. According to St. Jerome, who revised the old Latin Bible into what is called the Vulgate Version of the Holy Scriptures, it was a pillar erected near a flight of steps (translated degrees in the English Bible). Berosus was the first to construct a sundial proper, in B. C. 540—the first recorded in profane history.

But sundials are only useful when the sun shines; hence some other measures of time became a necessity. The Egyptians were successful in inventing such a contrivance. They called it the Clepsydra (kleps, to steal, and hudor, water), by which time was measured by a continuous flow of water at a uniform motion. The Clepsydra is first mentioned by Empedocles, who flourished in the fifth century before Christ. It was brought to a high degree of perfection by a philosopher of Alexandria, named Cteseblus, and continued down to the invention of clocks, probably in the fourteenth century. Watches followed in due course, till they have become an almost necessary requisite of everyday use.

Most people are under the impression that the rotation of the earth has never varied from one complete turn in twenty-four hours. But this is an error. The motions of both earth and moon have not been invariable. There was a time when the lunar month was twenty-nine days instead of twenty-seven, as it now is (Sir R. Ball: Time and Tide). The synodical month, therefore, was between thirty and thirty-one days. (A synodical month is the interval from one new moon to the next.) So that primitive man, reckoning the month as a synodical period, or lunation, may not have been so inaccurate as we in our superior wisdom imagine.

Going back from this epoch to the infancy of the moon, we come to a time when the day and month were of equal duration—about four hours each! Going forward to the old age of the earth, we come to an epoch when the day and month are again equal. But this time, instead of being four hours each, they will be 1,400 hours. Just think of it! One day lasting 1,400 hours! When the day will equal fifty-eight of our present days, what will be the length of the year? But we must not stop at a 1,400-hour day. Going still forward in the far-off future, we come to a time when the face of the earth will be always turned to the sun, as the moon's face is now turned to the earth, and as she will continue to be. Then there will be a perpetual day, for the sun shall never set, literally fulfilling the words of the prophet: "Thy sun shall no more go down, neither shall thy moon withdraw itself." (Is. lx:20.) The romance of time! How it fascinates!

The new year has been observed with festive rejoicings from remotest antiquity. Its celebration by religious, as well as secular observances, prevailed generally among the nations of antiquity. And Egyptians, Hindus, Chinese, Persians, Jews, Romans and Mohammedans, although differing widely as to the time from which they reckon the new year, all regard it with especial interest of a joyous kind.

In olden Roman times the new year, which began in March, was inaugurated by a festive procession, with the priests of Mars carrying the sacred shield before the people. The people wished each other good health and prosperity and exchanged presents.

The Chinese begin the year at the Vernal equinox, and make it one of the most splendid festivals. All classes mingle together, and unite in thanksgiving for mercies received and prayers for a genial season and good crop.

With the Hindus the first day of the new year is sacred to Ganesa, the god of wisdom, to whom kids and wild deer are sacrificed amid illuminations and rejoicings. Among the mountainous tribes a buffalo is sacrificed before vast multitudes of people.

In ancient Persia prisoners were liberated and offenders pardoned. The Persian new year much resembled the Sabbathical year of the Jews.

The Sabeans held a grand festival on the day the sun entered Arus, one of the signs of the Zodiac. Priests and people marched to the temples and sacrificed to the planetary gods.

In the British isles the Druids began the year on March 10th, with the solemn ceremony of cutting the mistletoe from the sacred oak. On that day two white bulls were tied by the horns. When a Druid, clothed in white robes, mounted the tree and cut off the mistletoe, after which the sacrifices were offered.

The Mexicans on new year's day adorned their houses and temples and engaged in various religious ceremonies. On such occasion human sacrifice was offered to propitiate the gods.

In modern times it is also an occasion of social rejoicing and interchange of courtesies. In England, under old style, the year began on March 25. On the change of date to Jan. 1, great opposition was offered by the people generally. Many really believed they were being deprived of eleven years of their existence.

Rev. F. P. Duffy, Secretary American Church Bible Institute.
Ravenswood, Illinois.

WITH THE VETERANS

The Seafarers.

Light heart, brave heart,
Drear the sea around us!
Stanch heart, true heart,
Tell 'em where they found us.
A thousand miles from anywhere;
Ice and gale and the rocket's flare;
Weather enough and a bit to spare;
"Assistance declined!" We'll do if we dare.

Light heart, brave heart,
Dull the sea around us!
Stanch heart, true heart,
Tell 'em where they found us.
Steady, steady, though the sun
Beat us faint; and the voyage begun
Seems not to end; and each slow day's run
Is reckoned in slow hours, one by one.

Light heart, brave heart,
Sweet the sea around us!
Stanch heart, true heart,
Tell 'em where they found us.
Sandy Hook to Cavite;
Liverpool docks to Mandalay!
Joy of the sea life, not the bay
Where you rust at your moorings
through the day.

—Emerson Gifford Taylor in the Outlook.

Bold Bluff Saved Him.

The morning of Nov. 6, 1863, saw Gen. Echols strongly intrenched on the top of Droop Mountain, where the day before he had joined Jackson's force, bringing with him four regiments, two battalions and a battery, which, when joined to Jackson's force gave the Confederates an overwhelming advantage in numbers as well as position.

General Averell, down in the valley, commanded the Union troops, consisting of the Second, Third and Eighth Virginia and the Fourteenth Pennsylvania Cavalry, Col. Schoonmaker's regiment.

The Confederates had what they considered an impregnable position; but no position was too strong for the daring of Averell's men. The Fourteenth Pennsylvania Cavalry, Battery B and an independent battalion crept up and occupied a position to the left, while Battery G was on the extreme right. The Second, Third and Eighth advanced in front. The men crept up the mountainside, through briars, over rocks and treetops, until within about fifteen yards of the crest of the mountain, when the Confederates opened fire, and a sheet of flame showed where their musketry was pouring at terrific leaden hail into our lines.

Over the breastworks the bluecoats clambered, heedless of the murderous fire. Then it was every man's duty to seek such shelter as could be found.

Capt. Billingsley of California, Pa.; Major Barclay of Hazelwood and the late Noah Messenger of Johnstown had many a hearty laugh afterward at having all tried to find protection back of one tree. Just at the time it wasn't so funny. Piles of rails protected the Confederate sharpshooters on the extreme left. Particularly harassing was the fire from five mountain howitzers, which came from the same direction.

William Steinaker, Orderly Sergeant of Company D, Second Virginia, was wide awake and very active that day. If you should visit him in his home in Allegheny and he should recall that day it may be he would tell you the story as I have heard it many times. This is as he told it at Beverly after the battle was over:

"You see, those mountain howitzers were doing pretty bad work. Out in the open I saw a little deserted woodchopper's shanty. The door was on the side facing the Johnnies. I thought if I could get in there I would be protected and could pick off the gunners at ease, so I sprinted over. It was about a hundred yards. Dashing into the shanty I was confronted by five Confederate soldiers, who evidently had the same thoughts as I had. Lord! my hair stood straight up on my head till it raised my cap off. There was only one thing to do, so I shouted 'Surrender!' and, to my amazement, they all handed over their guns and I marched the five in front of me, prisoners, back to our lines."

Sergt. Steinaker, although not a large man, seemed a very giant in battle, never seeming to know the meaning of the word fear.

Lieut. A. J. Pentecost, known to thousands of Pittsburgers, and Major Barclay, were among those who were specially mentioned for gallant action in official reports of the "Battle of Droop Mountain."—Pittsburg Dispatch.

A Critical Minute in Battle.

"One story," said the Georgia sergeant, "calls up another. In all the talk about Kenesaw no one has referred to what took place within the Confederate lines at the moment when the Union troops seemed on the point of breaking over the breastworks at the dead angle, on Cheatam's hill. Just as McCook's brigade received the heaviest fire of the Confederate line in their immediate front the Confederates to the right of the angle broke and the men were moving to the rear when Major Smart of a Georgia regiment, coming up with re-enforcements checked the panic. The men faced again to the front and took their places again behind the breastworks, where they remained.

"The story was told that day that some of the men of Maney's brigade heard that the Federals had flanked the Confederate position on the left. This word was passed along the line, and there was, for a few minutes, something like a panic. As Major Smart came up the retreating men were assured that the Confederate cavalry had checked the flanking movement, and the line was steady again. I thought of this when I read of the fight over the works, the men coming so close that a Union officer caught an ax from one of our men and carried it back with him. Suppose the Union column that pressed up close to the works had struck the point where the Confederates broke, what would have happened?

"There was a minute at the crisis of that battle when the Union troops, climbing the Confederate works might have gone over on to the backs of men retreating. The chance went with the minute, however, and the Union troops at that very point were the next minute met by a murderous fire. The incident illustrates the fear our men had of Sherman's flanking operations. They had been flanked so many times that they were looking for a flank attack that day, instead of the furious assault in front.—Chicago Inter Ocean.

From Cavalry to Artillery.

"The Second Ohio cavalry," said the Captain, "was on the frontier in September, 1862, when Gen. Blunt decided he wanted a battery. He detailed thirteen men from each company of the Second cavalry and formed what was afterward known as the Twenty-fifth Independent Ohio battery. The men, receiving guns and equipment, went to active service at once, and the adventures of the cavalrymen transformed into artillerymen came thick and fast.

"For example, Private James A. Russell, armed only with a revolver, dropped out one day to look for water. In going through a corn field he was halted by two rebel scouts, who, with rifles at a ready, demanded his surrender. Russell raised his revolver and all fired at once. The rebels missed their mark, while Russell blazed away until he had disabled both his antagonists and received their surrender. Then he procured a conveyance and took his two prisoners into camp.

"In one of its long marches in the Southwest the battery crossed the Ozark mountains in midwinter and was water-bound at the crossing of White river. The river was seventy-five feet wide, fifteen feet deep, and the current was very rapid. There was no boat large enough to carry even one gun across and it was decided to make a raft or boat. The wagon boxes were lashed together, covered with tarpaulins, and rails were used for decking. When the raft was completed and loaded, the problem was how to get a line across.

"Several plans were suggested and tried. First a man started across in a dug-out. The boat was swamped and the man was rescued with difficulty. A man tried to ride a horse across and failed. Then a line was tied to a mule's tail and an attempt was made to drive the mule, rideless, across to the other side. The mule landed on our side of the river and, being driven back, went off down stream, line and all. At last Lieut. J. L. Hadley attached a line to an empty case-shot and fired it from one of the guns.

"The shot finding lodgment on the other side, a man swam across, aided by the line, made it secure and the whole battery was ferried across without the loss of a single article of equipment. Officers and men were so elated over the achievement that when all were safely across they fired a salute. The battery had many ups and downs, but was finally recognized as one of the regular Ohio organizations, although there was a row over our not returning to the Second cavalry."—Chicago Inter Ocean.

Carried His Tunnels With Him.

"Gen. Sherman was in the habit of accomplishing such great things with such little loss of time that he won a remarkable reputation among the Confederates for overcoming difficulties," remarked Gen. W. F. Clark of the Army of the Tennessee to a reporter for the Washington Star.

"The general had some of the best engineers in the business with him, and whenever a road or bridge was to be constructed it was to be done in a hurry. When he wanted a bridge built he just sent out Gen. Dodge, the greatest bridge builder that ever happened, I guess, and in a little while a structure would be thrown across the stream or river, whichever the case might be.

"I remember one time on the campaign to the sea the Confederates were planning to blow up a tunnel that Gen. Sherman was intending to use. The matter was discussed by the 'Johnnies,' and one of the officers remarked that he thought the blowing up of the tunnel would be an effective move, when another officer, who appreciated Gen. Sherman's ability to surmount obstacles, said:

"'What's the use of blowing up the tunnel? Sherman carries tunnels right along with him.'"

The Army Pack Train.

A pack train cannot be stampeded while the bell is tinkling, even under heavy fire; neither will a charge by yelling Indians drive away the mules, unless the bell animal can be first run off. The more commotion there is, the more closely do they huddle about the bell animal, as though knowing that they are safe. Not only do the mules follow their bell, but they learn to recognize its sound as well. When two trains meet on the march the mules will not intermingle—each will follow its own bell. In case the mules of two trains are turned out to graze in the same neighborhood, and become mixed, it is only necessary to capture the bell animals, lead them to somewhat widely separated positions, rattle the bells, and the mules of each train will at once gather about their own bell. At night, when on the march, the bell mare is hobbled and turned out to graze with the herd. The packers well know that they will have no trouble in locating the pack animals, for they are always to be found, whenever wanted, within sound of the bell.—Leslie's Weekly.

Had to Be Ahead.

"At the battle of Chicamauga," said a veteran, "the skirmishers of the Eleventh Ohio were so close to the rebel lines it was dangerous to move in any direction. The men were behind trees along the line, and the officer commanding the skirmishers was behind a tree in advance of his men and nearer the rebels. Immediately behind the captain was Corporal James C. McLaughlin. Calling from behind his tree the Corporal asked, 'Who is ahead of you, Cap.' The Captain replied, 'No one.' Thereupon the Corporal remarking, 'Well, I won't stand that,' left his tree, and ran to another a rod in advance of the Captain, where he remained to the last."

The Next Encampment.

Gen. John C. Black, commander-in-chief of the Grand Army of the Republic, arranged details for next year's encampment with the Boston G. A. R. committee. It was agreed that the encampment will begin on Aug. 15 and that a parade not exceeding two miles in length will be held on Aug. 16. It is estimated that at least 75,000 veterans would be in line.

Britain's Dog Census.

Buried away in the returns of the British Board of Agriculture, is a canine census. It appears that last year there were 1,871,619 dogs in Great Britain, or one for, roughly, every twenty human beings. The revenue derived from licenses—1,525,273 dogs at 7s 6d each—was £571,977 7s 6d. In England there were 1,569,678 adult dogs, in Wales 119,588, and in Scotland 182,353.

LIVE STOCK

Discomfort in Stanchions.

Stock, to do their best, need to be comfortable as well as warm. Two do not always go together, although they ought to. Stock may be warmly sheltered, and still be uncomfortable. If they are, they will not thrive, as every good farmer knows. Extra feed may make up for lack of shelter, and keep the animals warm, the only loss being to the farmer who furnishes three dollars' worth of corn meal to do what one dollar's worth of battens would have done; but no amount of extra feed will make up directly for loss of comfort. Animals will, in time, get used to almost any treatment, I know; but wouldn't it be better and more profitable to make them comfortable from the first? There is very little money in the wintering of stock, at the best; and can we afford to have cows give less milk, or steers take on less flesh, than they ought to, simply because they are not comfortable?

Some years ago I wintered a score of steers coming three years old. They had evidently never been in stanchions, but had always run loose. I used stanchions in my barn, and with a great deal of trouble and coaxing we got these wild fellows all fastened in. Then I gave them the best of feed in abundance; but they were so uncomfortable that they did not do it justice. By being very quiet and patient with them we got them broken so they would go into the stanchions without much trouble, after a while, but they did not get thoroughly used to them, so as to be perfectly comfortable, in all winter. They were very much more comfortable along toward spring than when first put in, but not thoroughly so. I never worked harder over a lot of cattle and never succeeded so poorly. They were not comfortable, and no amount of warm shelter and good care and feed would make up for it. I am perfectly satisfied that, could they have been tied up they would have been easy almost from the first start, and that the result would have been far more satisfactory.—T. B. Terry.

Testing the Self-Feeder.

At the Illinois Experiment Station Professor Mumford has been testing the value of a self-feeder as against hand-feeding of steers, as to effect on the steers. Ten steers were fed by hand and ten by a self-feeder. After keeping the animals on full feed for 98 days, they were last week sold at the Chicago stockyards, bringing $5.40 per 100 weight. About a year ago they were bought for $4.85 per 100 weight. The resuts of the test are as follows:

	Self-fed. (lbs.)	Hand-fed. (lbs.)
Total gain	2510.00	2280.00
Average gain	251.00	228.00
Av. daily gain	2.561	2.326
Grain eaten per steer	2194.30	1946.00
Grain eaten daily per steer	22.00	19.60

It will be seen that the self-feeder cattle gained each .235 more per day than the hand-fed steers, but used 2.4 pounds more grain in doing it. At $5.40 per 100 weight this added gain brought in the market 1.269 cents and cost the value of 2.4 pounds of grain. At 50 cents per 100 weight this grain would be worth 1.2 cents, or about the same as the value of the grain. So far as the effects on the cattle are concerned it would appear that self-feeding and hand-feeding are about equal. It is impossible to feed any two bunches of steers and have the results exactly the same, even if both bunches be fed the same way. Incidental variation must always be counted on and unless there is quite a wide difference in the results, the experiment must be regarded as nonconclusive. This appears to be the case in the experiment reported.

Better Farming.

Among the different topics discussed at the Farmers' Institute meetings, perhaps none has received so little attention as this subject, and yet it is one of great importance. Many farmers have not even thought of it; some have given it considerable study and attention, and have learned to know the value of it, says A. C. Hallman in an Ontario report.

Not More Land, but Better Farming. The farmer has many hard problems to solve at the present time, and especially the young farmer or beginner. On many farms the soil is depleted of its vegetable deposits or humus through the old system of farming. Our produce from the exhausted soil has to compete with the products of the new countries with their virgin soil, and with the West, where the land is cheap and fertile. We are all clamoring after more acres, when the object in many cases should be better and more "intensive farming." Very few of us are so fortunately situated that we can add more acres, but nearly all of us can increase the producing capacity of our land by improved and advanced methods of farming, thereby enriching the soil so that in some cases double the amount of crops can be grown from the same farm. This is worth a great deal more than additional land. Among the many things that can help us are "catch crops." There is no definite time for sowing them. They may be sown at any time, or with other crops in the summer season. Nor is there any particular kind of crop. Any crop that is suited to the particular time of sowing will be satisfactory. Where the land is in good heart, clean and plenty of vegetable deposit (humus) clover, mixed with grass, ranks very high. If the season is favorable it will give an abundance of fall pasture, and in many cases with the roots and tops, will put as much back into the ground as the grain crop takes out of the land. In nearly all cases the fertilizing value of the stalks is worth much more than the seed cost.

If a young man's parents are able and willing to have him take a full agricultural course in a college or university, he should go by all means.—T. B. Terry.

Lifted Them.

Teacher—Well, Tommy, what steps did you take to enjoy yourself on Halloween?

Tommy—The parson's.

The beauty of waiting on a family table is that you never have time to get hungry yourself.—What to Eat.

Luxury is apt to transform pleasures into burdens.

POULTRY

Best Market for Ducks.

The Ontario Experiment Station has been making some experiments in the feeding and marketing of ducks. In a report, W. R. Graham, manager of the poultry department, says: The ducks were fed on a mixture of equal parts of bran, corn meal, and ground oats, moistened with skim-milk. About twice a week grit was added to the feed in the proportion of about one-half pint to a peck of grain. This is necessary to secure good digestion of food. Water was given for drinking purposes only, as ducks grow much faster when not allowed to swim in water. The Pekin variety proved to be the best market duck. They mature earlier than other varieties and having a creamy white plumage they present a nice appearance when dressed. The Cayuga was on the average, one-half pound less in weight after nine weeks' feeding. They are also inferior to the Pekins when dressed, being somewhat dark in appearance, owing to having a black plumage. Their flesh, however, is said to be of superior quality, having a better flavor than that of the other breeds. The Rouen ducks were large when matured, but grew rather slowly, not weighing over eight and one-half pounds to the pair when nine weeks old. Their colored plumage is also a disadvantage when they are dressed. A cross between the Pekin and the Rouen was tried, but proved to be but little superior in growth to the Rouen. It, however, dressed better in appearance, owing to the large proportion of white in the plumage. The Pekin drake was mated with high grade Rouen ducks. The dealer in Toronto pronounced the Pekin the most desirable market duck.

Nests for Pigeons.

Bulletin 177, Department of Agriculture: Nesting places for pigeons can be made as follows: Inch boards 12 inches wide, with parallel cross cleats (from strips one inch square) nailed on 9 inches apart, one set upright 12 inches apart (in the clear), with edges against the partition and securely nailed at top and bottom. These boards extend from floor to roof, and when in position boards 12 inches

square of inch stuff are cut and placed on the cleats to form the floors of the nest boxes, thus making little homes for the pigeons 9 inches high with a floor 12 inches square. The sliding floor of each box furnishes an easy method of removal for cleaning. Each pen contains two sets of nest boxes one against each partition, containing 60 boxes, or 120 in all, supplying each pair of birds with two nesting places with 20 to spare. The bottom of the lowest box is 15 inches from the floor. Nests should not be placed directly on the floor if possible to avoid it. Some pairs will persistently build on the floor, in which case it may be best to humor them and make no attempt to compel them to nest elsewhere.

Winter Feeding of Poultry.

We practice a method somewhat different from the ordinary practice, says a report of the Ontario station. Our experience in feeding warm mashes in the morning is that, unless the feeder is exceptionally careful, the fowls gorge themselves, and as a result take to the roost for the greater part of the day—which is more favorable to the production of fat than of eggs. A hen must be in good condition when laying, and the amount of flesh must be sustained, if continued laying is desired; but excessive fat is generally more harmful than a slight reduction in weight. The first feed in the morning is given about nine o'clock and consists of a handful of whole grain, usually wheat, to every three birds. This is well scattered in the litter on the floor. Previous to this the birds have been kept busy digging in the litter for the few morsels that may have been left from the evening meal of the previous day. When the forenoon is nearly gone the fowls are given a little cut bone or cooked meat each day, and, in addition, all the pulped roots, such as turnips or beets that they will eat. The amount of bone or meat given is small, the object being to give about two and one-half pounds to every sixteen hens during a week's time. A little whole grain is given soon after one o'clock, either barley or oats, not more than three handfuls to a dozen hens, the object being to induce exercise. If the hens are losing in flesh less exercise is given. In such cases a larger feed is given early in the morning and the noon feed of grain is generally omitted. The mash is given about four in the afternoon. The mash is composed of equal parts by measure of stale bread, corn meal, bran, ground oats and clover meal, or lawn clippings. These are dampened with skim milk or water, according to the abundance of the former. This should be fed warm if possible, and given in as large quantities as the fowls will eat.

Forests Destroyed by Sheep.

Sheep are exceedingly harmful, especially on steep slopes and where the soil is loose, says Gifford Pinchot. In such places their small, sharp hoofs cut and powder the soil, break and overthrow the young trees and often destroy promising young forests altogether. In many places the effect of the trampling is to destroy the forest floor and to interfere very seriously with the flow of streams. In the Alps of southern France sheep grazing led to the destruction, first, of the mountain forests and then of the grass which had replaced them, and thus left the soil fully exposed to the rain. Great floods followed, beds of barren stones were spread over the fertile fields by the force of the water, and many rich valleys were almost or altogether depopulated. Besides the loss occasioned in this way, it has cost the French people tens of millions of dollars to repair the damage begun by the sheep, and the task is not yet finished. The loss to the nation is enormously greater than any gain from the mountain pastures could have been, and even the sheep owners themselves, for whose profit the damage was done, were losers in the end, for their industry in that region was utterly destroyed.

Shrinkage in Cured Hay.

The variations in weight of hay are perhaps more marked than in most farm products, says Farmers' Bulletin 149. A considerable difference in shrinkage occurs between hay cured in dry weather and hay cured when the atmosphere is more or less moist. For this reason the shrinkage in hay in a dry climate is usually smaller than in the more humid regions. At the Kansas station small quantities of thirteen different kinds of hay buried in the mow from four to six months shrunk 4.5 per cent on an average, ranging from a 14 per cent loss to a 3 per cent gain. Five tons of very dry timothy hay stored in a mow for six months at the Michigan station lost nearly 7 per cent, and in another test 5,600 pounds of the same kind of hay in a good condition placed in the mow July 6 had lost 776 pounds or 13.8 per cent by February 18 following. Practical men estimate that hay put in the mow when in good condition usually shrinks about 20 per cent by the time it is baled. The Utah station has reported a loss of a little over 15 per cent in a ton of timothy hay after it had been kept in the barn for nine months. A stack of timothy hay containing a little over two tons and built in the open had gained a little over 1 per cent during the same time. The results with clover hay at the same station show a loss of 3.75 per cent during nine months when kept in the barn and a gain of 10 per cent for the same period when stacked out of doors. At the Missouri station timothy hay in the stack lost about 12.5 per cent by spring, and when stored in the mow about 7 per cent. A stack of second-growth clover put up at this same station in July had shrunk about 30 per cent in weight by the following March.

The results of experiments conducted by different stations show that the degree of maturity at which hay is cut influences very largely the shrinkage during curing. At the Pennsylvania station early cut hay lost on an average of 29 per cent in weight, while late cut hay lost only 21.5 per cent. Timothy cut when just beginning to head lost 75 per cent of water in curing; when cut at the beginning of the blossoming period, 66 per cent; and cut a little later, or about the usual time, 57 per cent. The Michigan station found a shrinkage of about 60 per cent in curing clover. At the New York state station meadow fescue mixed with a little red clover lost in one lot 62.68 per cent and in another 58.25 per cent during curing. The moisture retained in cured fodder varies with different kinds. Atwater states that for New England timothy hay retains on an average 12 per cent of moisture, clover hay 14 per cent, and corn fodder 25 per cent.

Feeding Alfalfa to Stock.

Alfalfa should not be pastured until it has matured a goodly hardy crown and root system to enable it to withstand the trampling of stock, says a bulletin of the Texas station. At least two years should be allowed the crop for this purpose, and even more would be conducive to a hardy crop. If green feed is desired the alfalfa can be cut and fed as a soiling crop during this time. Spring pasturing of alfalfa is responsible for the disappearance of many good stands. At this time of year the plant is just recovering from the effects of low temperature and needs all of its energies. If cut during early spring, the sickle bar should be set higher than usual. Do not turn a hungry or thirsty animal into an alfalfa field. By observing this rule and further accustoming them to it by gradually increasing their time of feeding, little or no injurious effect will accompany the pasturing of horses and hogs. Cattle are more liable to bloat, and even with the best of care and attention fatal cases will occur. Soiling cattle is the safest method of feeding them alfalfa. The Kansas station estimated the value of green alfalfa fed for seventy-four days to dairy cattle at $25.26 per acre. Profitable results have been secured by feeding alfalfa to steers, care being exercised to prevent scouring, by gradually increasing the amount to the maximum quantity. Pigs thrive on alfalfa pasture—twelve to fifteen head of pigs may be turned on an acre of alfalfa with the best results. In combination with a finishing ration of grain it is most effective. Experiments in feeding alfalfa to horses indicate that the cost of maintenance is reduced.

Bromus Intermis.

Bromus inermis (smooth, awnless, or Hungarian Brome-grass) is a very hardy perennial grass, with smooth, upright stems from 18 inches to 3½ feet high, and with open panicles or seed heads 4 to 8 inches long. It has a very heavy system of roots and underground root-stalks, which after it is well established makes a very tough sod and gives it great drouth-resisting qualities. It is a native of Europe and Asia, and has been known for over a hundred years, but was not cultivated until a few years ago, because it was thought it would become a pest similar to quack grass if cultivated. During the last decade, it has come very rapidly into prominence in this country. It has been grown in most of the Western and Northwestern states and has been reported on by the North and South Dakota, Nebraska, Colorado, Montana, Wyoming and Idaho experiment stations. These reports have been favorable to the grass. Because of its great drouth-resisting qualities, Bromus inermis is especially adapted to the drier portions of the state and will grow in places where none of the other tame grasses will survive. It is also well adapted to practically every other portion of the state, as it is able to thrive under wet conditions as well as dry. It also makes a good growth in shady places, where most other grasses will not do well. It will produce most abundantly on rich, heavy soils, but will grow on poor, thin soil better than most of our other grasses.—Kansas Report.

Stock Judging in Iowa.

The farmers' short course in live stock judging at the Iowa Agricultural college will begin January 4 and continue till the 16th. This is the fourth year that this course has been offered, and it has proved to be very popular. For instructors this year some of the most prominent live stock experts on the continent have been secured. Three days each will be devoted to the study of horses, cattle, sheep and swine. People expecting to attend should write to the college at Ames for circulars of information.