

### SCIENCE NEWS-LETTER

A weekly summary of current science, for personal use or use in classes, study clubs or libraries. Publication of the articles contained is expressly prohibited. \$5 a year, postpaid.

### SCIENCE SERVICE

1701 MASSACRUSETTS AVENUS TELEPHONE, MAIN 2015 WASHINGTON, D. C. EDWIN E. SLOSSON, EDITOR HOWARD D. WHEELER, MANAGER

No. 58

Edited by Watson Davis

May 8, 1922

## WERE ANCIENT INDIANS CULTURED CANNIBALS?

New York. Did the pre-historic cliff-dwellers eat human flesh? George H. Pepper, of the American Huseum of Natural History, points to evidence uncarthed by him in an archaelogical investigation of the ruins of the great walled-in town of Pueblo Bonito in Chaco Canon, northwestern New Mexico, as indicating that they did so occasionally whether thru stress of hunger or in the performance of some mysterious religious rite.

In some of the upper rooms of this silent stone city, charred and cracked human bones were found scattered about with animal bones which had apparently been part of the meal. "Skulls and other portions of the skeletons presented the same appearance," Says Mr. Pepper, "as did the animal bones broken open for the extraction of the marrow. There was no evidence of human bodies having been buried in rooms above the first floor nor was there any evidence of there having been a fire in the room." Whether this ghastly feast was the result of some Russian-like famine or part of Shoulish religious rite is a mystery to which there is as yet no clue.

This pueblo was built years before the Spanish Conquest of Mexico and investi-Sations show conclusively that it was occupied for many years--perhaps centuries. The later architecture is clearly superior to the older portions and shows that these Indians had reached a high plane of development. Nowhere in the Southwest have there been found such masses of turquoise beads, pendants and inlays as were discovered among these old Bonito people whose esthetic attainments are further shown by the elaborately decorated stonemortar and the designs in color on the various skillfully wrought Ceremonial articles found in the council chambers of these cliff-dwellers.

have first over best pro- both man prop best part

#### FIRST STEPS TO INVENTIONS TAKEN THROUGH WATCHMAKING

Washington, May 11.- Watchmaking was the first step to most of the principal inventions that make modern industry what it is today, Carl W. Mitman, curator of the U. S. National Museum, declared at a meeting of the Horological Institute of America here this afternoon.

-2-

James Watt, who invented the separate condenser for the steam engine which resulted in the development of the true steam engine and began the replacement of hand power and appliances by mechanical devices, was first a watchmaker and then an instrument maker.

George Stephenson, whose locomotives first definitely established the economic worth of the steam transportation, though an engine man and engineer, made extra money by repairing the watches and clocks of his neighbors after his day's work.

When the Baltimore and Ohio Bailway, after its first trial of the steam ledomotive, offered a \$4,000 prize for steam locomotive that could pull 15 pounds at the rate of 15 miles per hour, two watchmakers of Philadelphia, Stacey Costell and Ezekial Childs, competed.

Matthias W. Baldwin was a watchmaker who progressed from the building of a model locomotive for a Philadelphia museum to the founder of the Baldwin Locomotive Works, today the largest concern of its kind in the world.

Henry Ford's post-graduate work as a machinist was that of watchmaking and he almost went into the business of making serviceable watches at a production cost of thirty cents rather than Ford automobiles.

John Fitch, who built a steamboat which made regular trips on the Delaware River between Philadelphia and Trenton and obtained from the King of France a patent for propelling boats by steam, learned his mechanics while apprentice to a Connecticut Watchmaker.

Elias Howe, inventor of the sewing machine, was apprentice to a repairer of chronometers and surveying instruments while he built the first sewing machine.

Ottmar Merganthaler, whose invention of the lin-o-type machine, makes the modern newspaper possible, emigrated from Germany in 1872 with no capital but his completed apprenticeship as an expert watchmaker and thirty dollars in cash.

# -3-BROADCASTS

#### Radio News of the Week

RADIO FOG SIGNAL SET INSTALLED ON LATEST U. S. LIGHTSHIP

Washington. An automatic radio fog signal is one of the features of the newest and largest light vessel in the United States Lighthouse Service, vessel No. 105, which will shortly go into commission off Cape Hatterns on the dangerous outer Diamond Shoal, one of the most treacherous and exposed points on the Atlantic Coast.

In foggy weather three distinct fog signals will warn the mariner near this Vessel. On a 1000 meter wave length, the radio signal will go out through the ether to ships equipped with the radio direction finder, a steam chime whistle will create sound waves in the air that will be recorded on human ears, and a submarine bell will send sound through the conducting water.

No. 105 is the first lightship to be equipped on construction with the radio fog signal. The ship guarding the Golden Gate, off San Francisco, was recently equipped with radio signaling apparatus. The new ship off Hatteras will replace the former light vessel No. 72 that was sunk by gunfire from a German submarine during the war.

000000

ENGLISH PLAN LARGE DEVELOPMENT OF WIRELESS

#### (By Science Service)

London. 1 (By mail)- Plans are being laid here in England to develop wireless on a large scale and along different lines from the recent expansion in America. Up to now the Post Office department has made the use of wireless apparatus by private persons almost impossible by the licensing system which applied to receiving sets as well as sending apparatus.

It is understood that steps are being taken to change this policy and to allow every facility for the extension of wireless telephony.

As soon as these restrictions are removed, it is understood that the Marconi Company will establish a large transmitting station and that receiving apparatus will be hired out at a charge which will probably not be more than that of the ordinary telephone installation. It is said that the Marconi people are ready to make million of fool-proof instruments that can thus be rented.

English newspapers are only now explaining the general features of wireless telephony to their readers.

#### 000000

ADIO SIGNALS HELP IRPLANES TO LAND

Washington. A new radio method of assisting airplanes to locate the anding field and come to earth safely has been developed by the Eurcau of Standards as the result of several years study.

- 4-

Radio direction finders and other devices have been in use for some time to assist airplanes in landing during the night, fog, or at other times of poor visibility. The usual method of employing radio for this purpose is to transmit from any ordinary elevated antenna at the landing field radio signals which are received on a direction finder carried by the airplane. Such a method gives the direction of the landing field but does not tell accurately the distance from the plane to the field.

The aviation experts of the army and navy wanted a method which would give a signal heard over a comparatively large area when the airplane was at a high altitude but would be localized within a small area when the plane was near the ground. A large horizontal coil tuned to 500 cycles was tried by the Bureau of Standards but did not prove satisfactory. The use of radio frequency waves was, therefore, undertaken and two horizontal coils, one above the other, with current flowing in opposite directions, were used. A fairly high radio frequency, such as 300 kilo-cycles or a wave length of 1,000 meters, was employed in this case.

Signals radiated from the two coils were the strongest for an airplane flying in a given horizontal plane whenever the airplane was within a comparatively small ring-shaped area located above the landing field.

GROWING MUNINY WHEAT A HERE MYTH

St. Louis. Wheat from the tombs of ancient Egypt will not germinate, says a bulletin of the Missouri Botanical Garden. All the stories of the so-called "mummy wheat" growing after centuries of rest in the tomb are more myths which cannot be credited.

Either the grain which germinated never came from Egypt or was of recent origin and had not been buried for centuries. Actual experiments have proved that out of 750 seeds of wheat stored under ideal conditions for 16 years only 8 per cent sprouted, and by the time the seed was from 30 to 35 years old no germination would take place

Hard have post part John your just new hard half

10. 58

#### NETS OF THE STARS

# Mars Now Mearing Us in Southeastern Heavens

By Isabel M.Lewis, of the U.S. Naval Observatory.

The fiery red planet Mars, due to arrive at opposition to the sun on June 10, may now be seen rising above the southeastern horizon between 9 and 10 o'clock in the evening. On May 15 Mars will cross the meridian about 2 a.m. and on May 31 about 12.40 a.m. (Eastern standard time). Its distance from the earth is decreasing rapidly as is evident from its rapid increase in brightness at this time. On May 15 its distance from the earth is 51,200,000 miles and on May 31 44,900,000 miles. Its nearest approach to the earth for this apparition will be on June 18 eight days after its opposition to the sun. It will then be 42,350,000 miles from the earth. This is the nearest approach of Mars to the earth since the favorable opposition of 1909. At the next opposition of Mars in 1924 the planet will be less than 35,000,000 miles from the earth which is very close to its least possible distance.

From now on until June 18 when its brightness reaches a maximum Mars will rival or surpass Sirius, the brightest of the stars, and Jupiter, ordinarily, with the exception of Venus, the brightest of the planets. On May 21 the estimated brightness of Mars will be identical with that of Sirius and on May 28 it will equal that of Jupiter. After that, Mars will continue to increase rapidly in brightness until June 18 while Jupiter, which passed its opposition to the sun in April, is decreasing slowly in brightness. Jupiter will be found at this time a little to the west of the meridian.

By July 20 Mars will again be equal to Jupiter in brightness and during the remainder of the summer will decrease noticeably in brightness as its distance from the earth continues to increase once more. By September 1 Mars will be 67,000,000 miles from the earth.

It is impossible to mistake Mars for any other object in the heavens at this time owing to its unusual brightness and its fiery red color. Though it is now not far distant from Antares in Scorpio, the rival of Mars, which strongly resembles it in color, there is no comparison between the two in brightness at the present time. Yet so greatly does Mars change in appearance in different parts of its orbit that there are times when Antares is identical with Mars in brightness as well as in color

At its present apparition Mars is so far south that it is not in a favorable position for observation in the northern hemisphere. Astronomers in northern latitudes are therefore counting on the observers of the southern hemisphere in South Africa, South America and Australia to make careful observations of the markings on the planet. In June and July, Mars will be nearly in the zenith in 26 degrees south latitude.

- 6-

It is now late summer and early fall in the northern hemisphere of Mars and both hemispheres of the planet will be well placed for observation. As it is not the season when the Martian canals are numerous, observers of Mars are planning to observe chiefly charges in the more conspicuous markings of the planet, the appearance of frost and snowstorms and the spread of vegetation northward in the southern hemisphere. The green color of the southern maria, which are believed to be tracts of vegetation, is expected to be very noticeable this year. The north polar cap has disappeared at this time but the south polar cap will be very conspicuous.

(Dr. Slosson this week tells of the important contribution that Franklin, editor and scientist, made to electricity. This has an especial appeal to every radio form. It is the second of a series of signed editorials on various aspects of modern science by Dr. Slosson, editor of Science Service.)

## FRANKLIN'S FORESIGHT

By Edwin E. Slosson

Franklin's fame has been somewhat obscured by the fact that he is famous in so Many different fields. Nobody can write a history of American literature, politics, education, journalism, economics, diplomacy, philanthropy or philosophy without giving a chapter to Franklin. But the world distrusts a many-sided man and particularly a wit, therefore Franklin's solid contributions to natural and social science are apt to be meetimated.

Everybody knows the story of his experiment with the kite and the key which proved that the tiny sparks which could be got from cat's fur in the dark were of the same sort as the thurderbolts that tore trees to splinters. But not everybody knows that we owe to Franklin's ingenuity the terms "positive" and "negative" electricity which have been in use ever since and are so firmly fixed in our minds that We can hardly conceive of any other way of thinking about electrical processes.

Franklin knew that there were two opposite kinds of electrification. A French physicist, Dufay, had discovered a few years before that a glass rod becomes electrified when you rub it with silk and that a stick of sealing wax becomes electrified when you rub it with cat's fur. But the two bodies are electrified in different

and contrary ways. A pith ball that would be attracted by the glass rod would be repelled by the sealing wax stick and vice versa. It seemed then as though there were two different kinds of electricity and Dufay called the kind on the glass "Vitreous electricity" and the kind on the sealing was "resinous electricity".

-7-

May 8, 1922

But Franklin was an economical man. He did not want to spend two pence where <sup>2</sup> penny would do. He did not want to use two ideas where one would do. Since these two electricities act just alike except in their opposition to each other, and since they neutralize each other when brought together, why not, thought Franklin, assume that there is only one electricity and that a body merely gets a little more or less of it by rubbing? Franklin was a business man before he became a scientist so he carried his bookkeeping over into his new field and conceived of electrification as <sup>2</sup> sort of debit and credit system.

To show you what a close shot at long range Franklin was I will quote his definition of electricity:

> "The electrical matter consists of particles entremely subtle, since it can permeate common matter, even the densest, with such freedom and ease as not to receive any appreciable resistance".

But this was too simple a notion to suit succeeding scientists so for more than a hundred and fifty years they held the "two fluid" theory and refused to believe that electricity consisted of particles. Now, however, the existence of the subtle particles has been proved. "Electrons", we call them. They can be tracked, crught and counted although too small to be seen. The other and opposite kind of electricity consists of atoms of ordinary matter minus these electrons.

Right here Franklin's foresight failed him and his luck turned against him. He had notpossible way of telling which kind of electrification was due to the encess of the electrical particles and which to the deficiency, which state should be called "positive" and which "negative". It was a matter of chance and he made the wrong choice!

For we now know that the free flying particles of electricity, the electrons, are of the "negative" sort while the matter from which they have been subtracted is "positively" electrified.

But it is too late to exchange the terms now so we shall have to continue this confusing use for all time, just as we continue to call the end of the magnetic needle that points north the "north pole" although we know that it should be the south

ASTRONOMERS AND CHURCHMEN BOTH CONSIDER CALENDAR REFORM

Washington, In Rome astronomers and church dignitaries are seriously Considering reforming the calendar that we are using. Many people consider that the present calendar has quite enough bad points to require its complete reformation.

-8-

Do you realize that -

February is one-thirteenth of the year instead of one-twelfth as you generally think of it?

Months that differ in length from 28 to 31 days have a difference of 11 per cent The churches will get three per cent more money in their collection plates this Year than last because there are 53 Sundays this year instead of the 52 of last year.

While the railroads lose money this year because of the extra Sunday, they will gain money next year because of an extra Monday.

If business was poor in Fobruary, but you think it improved wonderfully in March, You had better analyse your accounts closely as March has 14 per cent. more earning time than February.

Prisoners are the only people who definitely know the length of a month. They serve equal months of 30 days.

The astronomers now meeting at Rome have a revision of the calendar in a prominent place on their agenda. Toward the end of this month there will be a meeting of Catholic Church dignitaries who are expected to consider changes in the calendar, Particularly the fixing of Easter. Cardinal Mercier of Belgium is honorary chairman of the committee on the reform of the calendar of the International Astronomical Union and he will also play a prominent part in the meeting called by the Vatican.

Two schemes for the reform of the calendar are receiving the most attention. These are the international fixed calendar plan and the French or Swiss plan.

The first of these plans was first publicly proposed by Moses B. Cotsworth of Vancouver, formerly of York, England, in 1894. Essentially it would provide for thirteen months in the year, twenty-eight days to each month, with every date attached to the same day of every month. New Year's Day would be a zero day called January O, and it would be an international holiday. The extra day in leap year Would be a similar holiday inserted as July O to gain better weather for holiday enjoyment than is possible on February 29. The new month of four weeks would not add to the actual length of the year. It would be inserted between June and July, and

#### May 8, 1922

probably called "Sol" because it would always contain the solstice day in both northern and southern hemispheres. Easter would be fixed by the Christian churches oh some date about April 14 and thus stabilize an event whose drifting causes inconveniences and losses in business and social life. By this plan every month of every year forever would have the following calendar:-

S	M	T	W	T	F	S
1	2	5	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	.28

Dr. Cotsworth points out that under the 13 month-year each day of the month will fall on the same week day month after month and year after year. With this new 28day month money spent for salaries, rents and monthly accounts will circulate 9 per cent faster than under the present plan.

The French plan proposed by M. G. Amelin to the Societe Astronomique la France in 1887 has been advocated largely by astronomers. It is sometimes called the Swiss plan. It sets aside each New Year's Day and each leap-year day as independent legal holidays. This plan divides the remaining 364 days into four quarters of 91 days each, each quarter containing one month of 31 days and two months of 30 days.

The international fixed calendar plan recently received the unanimous approval of a convention held in Washington by those interested in calendar reform and it is Worthy of note that this convention was called by the Liberty Calendar Association of America organized to further the adoption of the Liberty Calendar which, similarly to the international fixed calendar, has a thirteen month year. Recently also the American Section of the International Astronomical Union, after considering both the Swiss plan advocated by its committee on calendar reform and the calendar emplained by Mr. Cotsworth, refused to instruct its delegates to the Rome meeting. The fixed calendar plan seems to be gaining headway in this country as it has in Canada and England. It is said that the International Chamber of Commerce looks upon the plan with favor.

Advocates of calendar reform declare that a new calendar can be adopted just as easily as standard time was established by an international congress in Washington about 40 years ago.

## AUTOS ATTEMPT CROSSING SAHARA

Paris. Twelve motors will shortly start from Tuggurt, the terminus of the Algerian railway, in an attempt to cross the Sahara Desert. The leader of the expedition will be Commandant Lafargue and it will include a dozen members representing various government departments and other interests. A motion picture operator will join the party. The proposed route leads by Insalah, the Hogger region, and Adar of the Iforas, to Bureni on the Niger, 120 miles east of Timbuktu. Precautions have been taken to prevent the evaporation of the motor fuel in the torriclimate that will be encountered and it is believed that this difficulty has been overcome. Experts point out, however, that there is a vast difference between the exceptional use of motor traction in this region for a special purpose, which may be feasible, and its regular commercial use.

#### No. 58

m9m

WHALES DESTROYING ALASKAN FUR SEALS

Washington. - Half of the Alaskan fur seals are lost at sea before they reach commercial or bearing age, is the conclusion of the Committee on Conservation of Marine Life in the Pacific of the American Association for the Advancement of Science.

As the fur scal is a valuable commercial asset to the United States the committee advises an investigation of the causes of the depletion of the Alaska herd.

From 1918 to 1920 the government sold 42,109 pelts, the gross proceeds from which were \$3,584,059, or an average of more than \$1,000,000 per year. Commercially killable males lost at sea have fully equalled this number, and an equal number of females were lost, it is declared.

Illegal open-sea sealing has been inconsequential since the treaty of 1911, the committee believes, and does not appear to have resulted in the destruction of more than 2,000 animals annually. The total loss amounted to about 60,000 animals in 1921.

The experts declare that fur seals do not appear to perish at sea in large numbers from hunger or disease and that the killer whale is the only known important open-sea enemy. Killer whales have been observed in the act of destroying fur seals on a great many occasions, particularly in the vicinity of the Pribilof Islands. Records exist of 18 to 24 seals having been taken from the stomachs of two killers.

The investigation urged would result in capturing killer whales off the Alaskan coast and examining their stomachs to determine the number of seals recently destroyed. This would not only give evidence of the criminality of the whales, but will decrease the enemies of the seals.

KUDZU MAY RIVAL ALFALFA AND CLOVER

Washington. "Chemical analysis indicates that Kudzu, the leguminous vi. introduced into this country from Japan years ago, is very nutritious, being comparable to alfalfa and clover," reports the U. S. Department of Agriculture.

Kudzu roots are rich in starch and are sometimes used for human food in Japan.

Horses, cattle, and hogs all seem to relish the vines with the green leaves and the find the hay palatable. The vine thrives best in warm, moist climate of the easter. United States but it will live thru winter as far north as Nova Scotia. Although it has been grown in this country since 1876, it was only recently the

its importance has been recognized.

-10-

### SCIENCE OF GROWING THINGS

Agricultural News of the Week.

CORN COBS SOURCE OF ORGANIC ACIDS

Madison, Wis. The humble corn cob is coming into its own. Every ton of the 20,000,000 tons of this product burned or discarded in this country every year is capable of yielding over 300 pounds of acetic acid and 320 pounds of lactic acid if the yield on a commercial scale should prove equal to laboratory results, according to the Wisconsin Agricultural Experiment Station here.

The acids are easily obtained by fermenting a syrup made from corn cobs hydrolyzed. With dilute sulphuric acid, which yields 30 to 40 per cent xylose, a kind of sugar. This sugar solution is fermented by the proper bacteria and the resulting acetic and lactic acid in almost equal quantities accounts for 85 to 90 per cent of the xylose.

These acids are particularly useful in the tanning of hides and the manufacture of acetone and other chemicals. The commercial development of this industry will involve numerous chemical and technical problems, but the possibility of producing chemicals in this way was proved when over 5,000,000 pounds of acetone was obtained by a ferment process during the war for use in making explosives.

SEARCH FOR VOLCANOES DEEP UNDER SEAS

Rome. Scientists do not know how many large volcances lie under the surface of the oceans. Every now and then a ship at sea will be shaken by a submarine eruption but the captain will enter the occurrence in his log-book and nothing more will be done about it.

A systematic search of past and future log-books of ocean vessels has been pro-Posed at the meeting of the International Geodetic and Geophysical Union here which is attended by a number of American geophysicists. The hydrographic office of each country will be asked to undertake an investigation of the logs, and ocean steamship lines will be asked to cooperate.

This information will aid in the compiling of a catalog of volcances. Scientists expect to find that there are many more volcances hidden in the seas than are visible rising out of the land or sea, as the earth's surface is about one-fourth land and three-fourths sea. Rows of volcances are found along great cracks in the earth's crust One such supposed volcanic zone runs from the West Indies to the Azores and many of the Pacific islands are wholely of volcanic origin, one example being the Hawaiian Islands. DO YOU KUIOW THAT -

The holothurian or sea-slug is a smail-like creature, which can throw off its vital organs when frightened and replace them all within a few weeks.

Twenty per cent of all the forest fires started by man in the National Forests of the West during 1921, were caused by careless tobacco smokers.

mail in-at loss, star, both later part here the

An international silk testing house has been established at Shanghai, China, to receive and issue certificates for a limited amount of raw silk.

Preventable waste among broom monufacturers can be traced in many instances to the first steps in harvesting broom corn.

DO YOU KNOW THAT -

About 62,400,000 short tons of stone was quarried in the United States in 1921, according to the Geological Survey. This is more than 20 per cent less than the production in 1920.

For the first time since 1914 a shipment of more than 1,000 game birds for stocling the game preserves of the west has come from Europe to the United States.

page hant poor book over page New poor jurit, Mart

Consignments of 100,000 trout eggs have been successfully shipped from the Bureau of Fisheries in Washington to: the Swiss government at Berne.

Jully most junt junt had had have have pairs july 2040

Due to its adaptability and advantages, alfalfa is the leading irrigated crop, and together with other meadow crops constitutes 52.5 per cent of the cultivated acreage on Government projects.

Bear house have been pass and how how how

DO YOU KNOW THAT -

So great is the discharge of oil of various sorts from ships that it has been proposed to skim it off from some harbor waters and make it available for use by proper treatment. A patent for the recovery of oil from backwaters has been taken out in Switzerland.

Work on the vehicle tunnel under the Hudson River has been started at West and Canal Streets in New York. The completed tunnel will be ready in about four years and is to cost \$19,531,723. The tunnel will have twin tubes.

The cucumber is one of the oldest of the garden vegetables. Some 3,000 years ago in the Far East, probably in India, it had its origin.

Sounds can generally be heard much farther by night than by day; sometimes 10 or even 20 times as far. One reason is that the air at night contains, as a rule, few eddies and other local disturbances, such as break up the sound waves by day. Moreover, on calm, clear nights the vertical distribution of temperature near the earth is often the reverse of that occurring by day, and has the effect of bending the sound waves downward instead of upward.

a state have been party party party and date

# DO YOU KNOW THAT -

The fish and game commission of California, during the fifty-one years of its existence, has been responsible for the planting of the almost unbelievable total of 1,128,800,000 fish.

Pipes have been found in Europe that antedate those of America. The pipe in those pre-historic times must have been used for smoking herbs other than tobacco, probably as a ceremony.

The gipsy moth was introduced in this country at Medford, Mass., in 1869, in connection with some experiments in hybridizing sillworms. A few specimens escaped, and about twenty years later the insect had become a serious pest. Between 1890 and 1900 the state of Massachusetts spent about a million dollars in combating the insect, which became scarce temporarily, but speedily resumed its depredations when the campaign against it was discontinued.

sector and sector state to state them been

A new device invented in Sheffield, England, for disinfection of clothes and other material by health departments promises to revolutionize present methods. It can be carried on a bicycle and can treat a ton and a half of clothing in six hours.

DO YOU KNOW THAT -

Antwerp, Belgium, is the center of the human hair industry. Raw hair and Chinese hair which has been bleached, dyed and prepared is used in the manufacture of ladies' hair nets.

Mild here been soon here here here here here

And have been been block from these bars block

Wild-garlic damage to wheat runs up into many millions of dollars.

According to tests of the Bureau of Standards this country makes better chemical Slassware than has ever been imported with respect to resistance to chemical attack, Power to withstand sudden cooling, and mechanical strength.

past hast may just your nest page few lense past

An excellent vinegar may be made from raspberries which will retain indefinitely the odor and flavor if properly preserved.

have have past here jone jone new here here

DO YOU KNOW THAT -

The first electric train on an Italian railroad, 165 miles long, the longest sin ? electrification in Europe, was recently run successfully.

One of the national standard weights of the United States has not been used for actual weighings since it was received from the International Bureau in 1889.

Cheaper raising were an important factor in the decline of the value of fruit and fruit products during 1921.

Farm machines to the value of \$536,945,000 were manufactured in the United State: during the year 1920, and all but \$66,626,000 worth were sold at home.

have while post must now man joint more been past

# READING REFERENCES TO NEWS-LETTER ARTICLES

VERE ANCIENT INDIANS CULTURED CANNIBALS? - page 1. Antiquities of the Jemez Plateau, New Memico, by E. L. Hewett, (Bul. No. 32 Smithsonian Institution, Washington, Govern-Hernice, 1906.) Pueblo Bonito by George H. Popper in Anthropological Papers, Vol XXVII, (American Muscum of Natural History, 1920.)

FIRST STEPS TO INVENTIONS TAKEN THROUGH WATCHMAKING - page 58. Timetelling Through the Ages, by H. C. Brearley, (Doubleday, 1919.) All About Inventions and Discoveries by F. A. Talbot, (Funk and Wagnalls, 1919.)

FRAMLIN'S FORESIGHT - page 6. Makers of Electricity, Chapter III, by M. F. O'Reilly and J. J. Watsh, (Fordham University Press, N.Y., 1909.) The Manysided Franklin, by P. L. Ford, (Century, 1899.) The A.B.C. of Electricity, by W. H. Meadowcroft, (Harper and Bros. 1915.)

ASTRONOMERS AND CHURCHMEN BOTH CONSIDER CALENDAR REFORM - page 8. The Roman Calendar, by W. R. Holliday, (article in Discovery, Sept. 1921.)

WHALES DESTROYING ALASKAN FUR SEALS - page 10. Story of Matha by David Starr Jordan, (Whittaker and Ray-Wiggin Co., Chicago, 1910.) Fur Seals and Other Life of the Pribilof Islands, Alaska in 1914, by W. H. Osgood & Others, (Washington, Government Printing Office, 1915.)

# FRACILENTS OF SCIENCE

And party have been some from party bars (and

The tremendous importance of knowledge of colloidal chemistry is fast coming to be realized by all scientific men. We live colloidal lives. Our food and even our drinks, be the latter milk, tea, coffee or the forbidden home-brow, are colloidal. We live in colloidal houses, for the materials, be they wood, brick or cement, furnish important colloidal problems. We ride on colloidal rubber tires, on a colloidal asphalt street, in automobiles made of colloidal alloys, colloidal wood and colloidal leather. - Dr. J. H. Mathews, University of Wisconsin.

We should be careful in our introductions of new organisms - man included - into hew surroundings. We have records of the unconscious introduction of rats into Jamaica, where they become a pest. To destroy them mongooses were imported, and the rats were soon checked. But the mongooses, having finished the rats, began to eat up the poultry and young birds of various kinds. As this went on the injurious insects and ticks, that the birds used to eat, began to gain the ascendant. A recent report which requires confirmation - says that the increase of ticks is making life a burden to the mongooses. Thus a balance will be again arrived at. There is not doubt of that, but how much is often unnecessarily lost by the way! - by J. Arthur Thomson.

It is only just that we who inherit should know our inheritance. - Walter Hough, Head Curator of anthropology, U. S. National Museum.

# The Dandelion's Multiplication Table.

Begin with a single dandelion plant bearing a single blossom cluster in the year - a slander on the enterprising dandelion - that gives rise to a hundred scods. Let these find lodgment and next year produce plants that each grow a single blossom cluster that produces one hundred seeds, and so on. It will be a matter of less than ten years before there are enough dandelion plants to cover every foot of land upon the face of the earth. Or consider the coyote that brings into being a litter of eight or nine pups at a time. Suppose these are half male and half female and require two years to reach sufficient maturity to breed. Let the breeding life be only five year. and if nothing interfered with the multiplication of a single pair and that of their offspring inside of half a century there would be a coyote for every square foot of earth. The rancher who has tried to exterminate his coyote neighbors, or the householder who tries to keep his lawn free from dandelions, knows that the possibilities are not overdrawn. - by Elliot Rowland Downing, University of Chicago.