SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •

MARCH 5, 1932

Martians of Electric Power

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SCIENCE NEWS LETTER

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The Weekly Summary of Current Science

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Edited by WATSON DAVIS

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? DO YOU KNOW THAT ?

There are craters on the moon 100 miles across.

The first sight-saving classes for school children who have defective vision were started in Cleveland and Boston 19 years ago.

American archaeologists excavating the market place of Athens hope this year to bring to light the Senate House and the Temple of the Mother of the Gods.

In the fifth century B. C., Greek doctors began to teach healthy living, and some of the wealthy people gave almost their entire time to diet, exercise, and other care of their bodies.

Alligator eggs have no shell, but have a transparent, parchment-like cover which yields to pressure of a finger, and returns to shape when released.

The value of kelp in animal feed is being tested in a series of experiments.

The new museum at Corinth, designed to hold the archaeological treasures of the city, is to be earthquake-proof.

One peculiarity of the present winter is that the amount of daylight has been above normal, and as a result less gas and electricity have been used for lighting.

Mexico City, built on land that was once a lake bottom, is now constructing its first thirteen-story skyscraper.

The least weasel, a member of the marten family, is the world's smallest carnivore.

Sweet potatoes provide the second largest vegetable crop grown in the United States.

One economist places the "touring industry" as the largest in the United States, citing the expenditure of $3,500,000,000 a year in proof.

A single lock with 24 different keys is the novel device made for the Westinghouse vertical parking machine, so that each of the 24 car owners unlocks his own parking compartment by using the proper key in the master lock.

Soviet Russia is planning to establish new weather stations in the Polar region.

WITH THE SCIENCES THIS WEEK

PHYSICS

Neutron, Atomic Brick, May Solve Mystery of Cosmic Rays

Physical Concept Made Prominent by British Researcher Is Close Combination of Familiar Electron and Proton

THE NEUTRON, the physical concept brought into prominence by research reported by Prof. James Chadwick of Cavendish Laboratory, Cambridge, England, is a close combination of two other more familiar parts of the atomic structure, the electron and the proton. The electron is the negative particle or unit of matter and electricity, while the proton is the unit of positive charge. The neutron, being a combination, has no charge at all.

Therefore physicists delving into the constitution of matter have considered that it would be very difficult to prove that it actually exists. The neutron would pass through ordinary matter without having any magnetic or electrical effects, but a theoretical possibility formerly suggested for its physical detection would be through the gravitational effect of the neutron upon passing close to some atomic heart or nucleus.

Attractive Speculation

While the idea of an electron and a proton combining to form a neutral particle that might play a part in the structure of matter is probably some fifteen years old, the idea of the neutron was put forward formally as an "attractive speculation" by Drs. R. M. Langer and N. Rosen of the Massachusetts Institute of Technology in a communication to the *Physical Review* of the American Physical Society on June 15, 1931. Prof. W. Pauli of the Institute of Technology at Zurich, Switzerland, also suggested the usefulness of the neutron when he spoke before the American Physical Society at Pasadena, Calif., last June. He suggested the neutron might explain some hyperfine structure in the line spectra of elements.

The neutron may be the solution of the mystery of the cosmic ray. Since physicists began to study these extremely penetrating radiations from outer space there has been difference of opinion as to whether they are electromagnetic waves like light and X-rays or streams of electrons, the negative particles of electricity. Prof. Chadwick's researches just reported from England may give evidence that they are neither, but that they are instead streams of neutrons. This would fit the experimental facts of other investigators here and abroad that show that cosmic rays can not be deflected by magnetic fields as electrons should be and yet do not wholly fit the character of an electromagnetic vibration.

New Building Block

Neutrons may prove also to be a new building block of the elements. The helium nucleus, also called the alpha particle, is now considered a fundamental brick for element building. It consists of four protons and two electrons and has a positive charge of two. The helium atom is itself built of four hydrogen atoms, which each consist of a proton with an electron revolving about it like a planet around the sun.

American physicists will await with interest Prof. Chadwick's scientific report of his experiments. It may prove that the neutron is formed during the artificial disintegration of matter, such as has been accomplished by Prof. W. Bothe of Giessen, Germany, who recently described his experiments in an exclusive Science Service dispatch.

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PHYSICS

Solid Matter Composed of Numerous Atoms in Blocks

THE MATTER that seems to ordinary eyes solid and unbroken is actually made of blocks, somewhat like a tile floor, each block made of several millions of atoms, Dr. Francis Bitter of the Westinghouse research laboratories has just established for the first time.

A magnetic powder was suspended by Dr. Bitter in a liquid which was allowed to evaporate on a shiny surface of the metal cobalt. As the liquid evaporated a regular lace-work appearance was produced by the grouping of the particles. As these deposits were arranged in the form of hexagons, Dr. Bitter concluded that the blocks of the metal itself had just this arrangement.

Magnetization of the cobalt specimen changed the pattern to a series of not quite parallel lines, showing that the blocks had become differently arranged under the influence of the magnetic force. Irregularities in the pattern were produced, Dr. Bitter believes, by impurities in the metal.

Dr. Bitter's discovery was not accidental but followed logically from a long series of theoretical investigations.

Dr. Bitter is the son of Karl Bitter, internationally famous sculptor.

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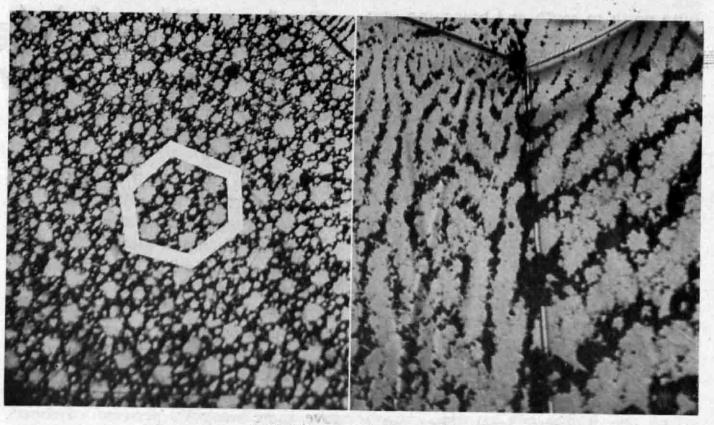

LIKE A TILE FLOOR

A highly magnified section of cobalt crystal is shown at the left. The white hexagon roughly indicates the shape of the blocks of atoms. At the right is shown what happens to these blocks when the cobalt crystals are magnetized.

ARCHAEOLOGY

Clay Tablet from Babylonia Called World's Oldest Map

"THE OLDEST map in the world." This is the proud label which belongs on a clay tablet discovered 200 miles north of Babylon.

This finding is hailed as the most important discovery that has been made by the expedition from the Semitic and Fogg Museums of Harvard University which has been excavating at the ruined city of Nuzi.

The map was buried 20 feet underground in a layer of ruins that was a living city in 2500 B. C., reports R. F. S. Starr, who directed the excavations.

The world's oldest map is the plan of a rich man's estate. At first glance, the map gives an impression of being very different from modern maps. It was marked in the surface of a clay tablet so small that it can be hidden in the hollow of a hand. Moreover, the place names and other writing on the map are in the wedge-shaped characters of Sumerian writing, which would make any document look strange. But on closer examination this map of 2500 B. C. does not appear very different from a sketch which any one might make today to show the lay-out of a country place.

Place Name Deciphered

North and south directions are marked. A river is clearly indicated running north to south and branching into three streams which flow into the sea. A valley spreads on either side of the river and beyond that rise the mountains. The map-maker drew mountains scallop-fashion, just as Babylonians did centuries later. You have undoubtedly seen similar technique of mountain drawing on impromptu maps of today.

One place name has been deciphered. It is read as "the fortress of Ib-la." From this, it has been conjectured that the rich man's estate may have been in northern Syria, some distance to the west of where the map was found. The name of the man whose land was thus mapped was Azala or Shat-Azala.

The map was unearthed when archaeologists who have been excavating ruins of 1500 B. C. at Nuzi decided to probe into a deeper level. They put a sounding pit through the mound, and 20 feet down they found more than 200 inscribed tablets, including the important map. These tablets reveal that the oldest city which stood on the site was not called Nuzi, as the city of 1500 B. C. was. The name in 2500 B. C. was Ga-sur.

The tablets, some of which are in the Sumerian language and some in Akkadian, are said to throw an entirely new light on the early history of northern Mesopotamia.

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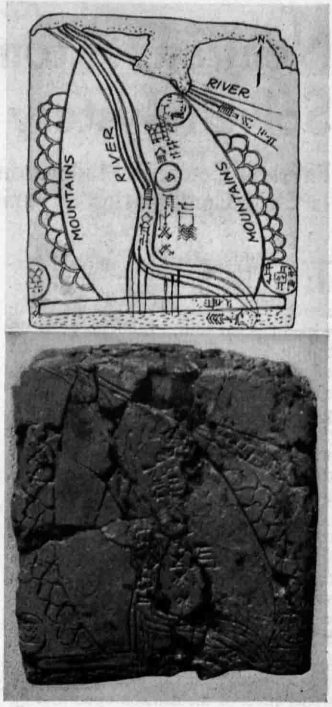

A RICH MAN'S ESTATE

Photograph of the oldest map in the world, a clay tablet so small that it can be hidden in the hollow of the hand. A line sketch made from the map is reproduced above.

BACTERIOLOGY

Bacterium from Deep Well Can Live on Petroleum

A NEW SPECIES of bacterium, able to live on crude oil and to convert ammonia directly into nitrate, has been discovered in oil from a California well over 8700 feet deep, by Prof. Charles B. Lipman and L. Greenberg of the University of California. It has received a preliminary description in *Science* and detailed discussion will be published in the near future. The organism was discovered as the result of researches growing out of Prof. Lipman's earlier investigations of living bacteria found in deeply buried ancient rocks.

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PSYCHOLOGY

Color-Blind Men Outnumber Color-Blind Women 4 to 1

ARTISTS and interior decorators who could not distinguish red from green were found in a recent test of over six thousand people attending the color exhibition at the Museum of Science and Industry of New York City, I. H. Godlove of the Museum told the Optical Society of America.

The men with abnormal color vision outnumbered the color-blind women by more than four to one, said Mr. Godlove, there being 5.9 per cent. of abnormal men and 1.3 per cent. of women, among the 6,539 persons tested. These percentages are higher than those usually accepted, four per cent. and four-tenths of one per cent., respectively, but cannot be taken as correct for the population as a whole, since sensitive persons may have avoided the test, while others suspicious that they had some defect may have come purposely for it.

Ten men and one woman were completely color blind. To such people all things appear only as different shades of grayish white, said Mr. Godlove. All the other abnormals were red-green blinds, the very uncommon yellow-blue blindness being absent in the group tested. Ishihara color charts were used.

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ASTRONOMY

Superfine Gauge to be Used In Testing Navy Telescope

Circular Optical Disc, Forty Inches in Diameter, Will Check Accurate Grinding of Special Glass Mirrors

COMPLETION of a superfine gauge that will be used to test the novel curvature of the mirrors for the most nearly perfect photographic telescope in the world has been announced by Prof. George W. Ritchey at the U. S. Naval Observatory where the telescope is to be erected.

Work on the mirrors themselves is beginning in the workshops of the Observatory in which the lighter parts of the mounting are being constructed under Prof. Ritchey's direction.

The heavier outside parts of the mounting, weighing about ten tons, have been completed near Philadelphia.

The new gauge to be used in testing each stage of the grinding and polishing of the actual mirrors, is a plane circular disc 40 inches in diameter, whose parallel faces and curved edge have been shaped true to one ten-thousandth of an inch. This is the same accuracy that will be aimed at in the mirrors themselves.

The telescope will be ten times as efficient as the 60-inch reflector at the Mount Wilson Observatory of the Carnegie Institution of Washington, in the opinion of Prof. Ritchey, who directed the design of both instruments. Prof. Ritchey regards the 60-inch instrument as being twice as efficient photographically as the 100-inch telescope at the same observatory.

The grinding and polishing of the 40-inch and 16-inch mirrors for the new telescope will require about 15 months, Prof. Ritchey said in an interview with a Science Service representative. The glass castings on which the specially calculated surfaces of the mirrors will be ground were recently received in Washington from the Saint-Gobain optical works in Paris. These discs are made of a special glass, resistant to heat changes as is that used for baking dishes. It was developed in Paris by Prof. Ritchey in collaboration with Dr. Henri Chretien of the Sorbonne, joint inventor of the new type of telescope.

Twenty years of laboratory experimenting and the experience gained from a 20-inch reflector of the new Ritchey-Chretien type tested last year in Paris, have enabled Prof. Ritchey confidently to plan an efficiency of ninety per cent.

Shortness of the tube holding the mirrors and the use of a counterpoise are among the methods which make the new instrument superior.

Final stages of the grinding, Prof. Ritchey said, will be carried out in a constant temperature room, in which the temperature will not fluctuate more than half a degree.

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OCEANOGRAPHY

Varied Wealth Expected To be Taken from Sea

FROM its inexhaustible storehouse of wealth, the sea will in the future supply man with useful substances of all kinds from precious metals to essential elements of diet and common chemicals, H. F. Taylor of New York, fishing industry executive, predicted before the Franklin Institute at Philadelphia.

"The ocean has become a reservoir of accumulated wealth of chemical materials that make the resources of the land appear insignificant," Mr. Taylor declared. "This accumulation of useful materials is a direct challenge to daring chemists to find ways and means of winning them back from the sea. It seems safe to predict that coming generations will realize the inexhaustible hoard of wealth in the sea, the complete assortment of chemicals, three-fourths of the living creatures of the earth of the greatest diversity of form and composition, and also perhaps power and refrigeration."

Of the 92 chemical elements, 47 are found in the sea, Mr. Taylor pointed out. They are in solution in water, in tissues in living plants or animals, or in bottom sediments. Few of them are now recovered for use by man.

Salt, iodine, bromine, magnesium chloride and magnesium hydroxide are the only substances that are now being taken from the ocean in quantity, it was said, because they can be separated from the water by such crude processes as evaporation and precipitation. Mr. Taylor predicted, however, that research will develop refined methods which will be used to recover economically the more valuable substances.

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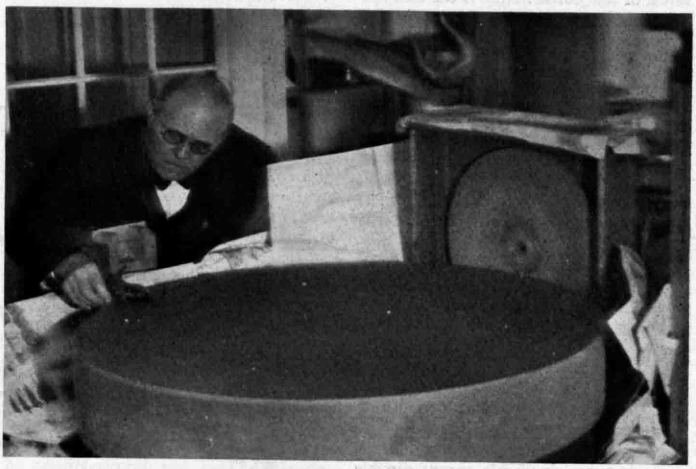


FOR GREATER EFFICIENCY

Professor George W. Ritchey is shown examining the edge of the optical disc to be used in testing the specially curved mirror of the new 40-inch photographic telescope which he is building for the U. S. Naval Observatory in Washington. The process of grinding the edge of this plate to an accuracy of one ten-thousandth of an inch has just been completed. The heavy parts of the mounting have also been finished.

ASTRONOMY

The Reflection of Spring

Shifting Arrangement of Heavenly Bodies Now Presages The Coming of Another Season, Which Begins March 20

By JAMES STOKLEY

THE APPROACH of spring, which begins on the twentieth of this month, is now reflected in the evening skies. Taurus, the bull, with red Aldebaran has descended to the western sky. The brilliant Orion which has been so conspicuous in the south in recent months shines now in the southwest. The three stars of the warrior's belt are horizontal. Above them is Betelgeuse, below is Rigel.

Farther to the south is Sirius, brightest of all the stars, marking the greater dog, Canis Major. Above is the other dog, Canis Minor, marked by Procyon, only slightly inferior to Sirius in brilliance. The twins, Gemini, are now nearly overhead. Pollux, the brighter of the two, is to the south of his brother, Castor.

In the western sky above and to the north of Aldebaran is Auriga, the charioteer, from which shines the star Capella. Below him is Perseus, and to the north of that constellation is the familiar W-shaped group making Cassiopeia, the lady seated in the chair.

The Lion Rises

Turning to the eastern sky we see Leo, the lion, rising towards the zenith. This group may be recognized by the well-known "sickle," the blade of which now pointing upwards forms the lion's head, and the handle his forefeet. The bright star at the end of the handle of the sickle is Regulus.

To the north of Leo is the great bear, Ursa Major, containing the great dipper, without doubt the best known of all star groups. As it appears now the handle of the dipper points downwards. The "pointers," the two stars forming the upper side of the bowl, indicate the direction of Polaris, the north star.

Below Ursa Major is Boötes, the bear driver, in which another first magnitude star, Arcturus, is visible almost directly east. A little south of the east point of the horizon and just below Leo is Virgo, the virgin. Spica is the bright star of this constellation, but at this season it is close to the horizon in the evening where its brilliance is partially dimmed by the atmosphere.

To the bright stars visible during March in the evening sky must be added three planets. One is Mercury, which never leaves the immediate vicinity of the sun and so is not commonly seen. When visible it is always either in the western sky just after sunset or in the east just before sunrise. This month on the twenty-second it is visible in the west when it reaches its "greatest eastern elongation." This is the time at which the planet will be farthest east of the sun, eighteen degrees and forty minutes. For a few days before and after this date you will be able to see it shining low in the west amid the gathering dusk.

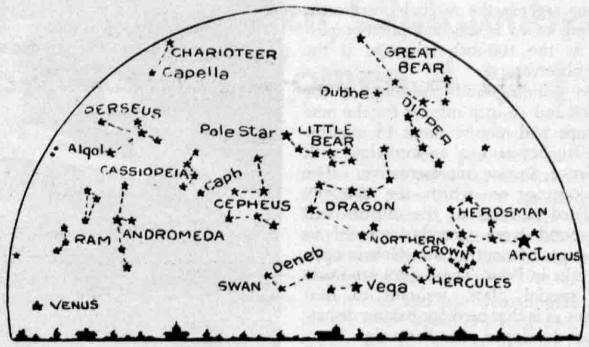
The other planets brought to us this month are Jupiter and Venus. The latter is also in the western sky but will remain visible all the month. It can be seen for a longer time after sunset than can Mercury. At the end of the month when you look at Venus and Mercury you will be seeing the three innermost members of the solar system. Mercury is the closest of all the plants to the sun, only 36,000,000 miles away. Venus is next with a distance of 67,000,000 miles from the parent body. The third planet is the one under your feet, the earth, 93,000,000 miles from the sun.

Jupiter is almost overhead in the eastern sky, in the constellation of Cancer, the crab, which comes between Leo and Gemini. Since it is now brighter than any star there is no doubt of its identity. Jupiter is the fifth planet in order of increasing distance from the sun. Next to the earth is Mars, with a distance of 141,500,000 miles, and then comes Jupiter, with 483,000,000 miles. Jupiter also has the distinction of being the largest planet in the solar system, with a diameter of 87,225 miles. In fact, it is so large that if it were hollow, the material of all the other planets could be poured into it with room to spare.

Mars Too Near Sun

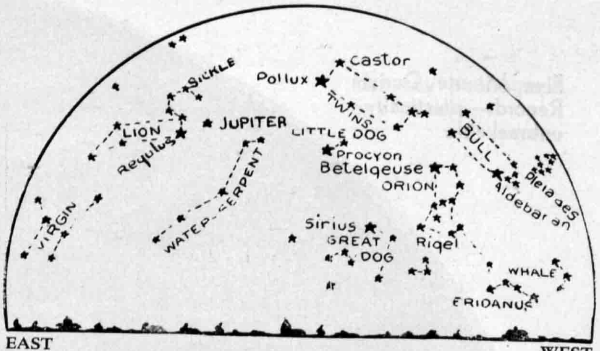
Mercury's diameter is only 3,125 miles, Venus' 7,750 miles, the earth's 7,963, and Mars' 4,231 miles. Mars is not visible at present as it is too near the sun. It will appear in the morning sky at the end of the summer. The farthest of the naked eye planets, Saturn, famous for its system of rings, is also missing from the evening sky, but it is visible in the early morning in the constellation of Sagittarius, the archer. About 3:00 A. M. this group can be seen low in the southeast.

March has another claim to fame, because two eclipses occur this month. But astronomers of the world have made no preparations to observe them even though they have already arranged to see



NORTHERN SKIES DURING MARCH

High in the west this month shines the constellation of Auriga, the charioteer, from which gleams the star Capella. Below Auriga is Perseus, the winged horse, and to the north the familiar wedge-shaped group forming Cassiopeia, the lady seated in the chair. At sunset all during March can be seen the brilliant planet Venus.



BRIGHTER THAN ANY STAR

Almost directly overhead during March evening skies is Jupiter, the largest planet in the solar system. It has a diameter of 87,225 miles and were it hollow, material of all the other planets could be poured into it with room to spare. Jupiter is now brighter than any star, and is the fifth planet in order of increasing distance from the sun.

the one that is coming on August 31. The two eclipses of March have little scientific interest. The first comes on March 7. On that day the moon will come directly between the earth and the sun. But the moon will be somewhat nearer the sun than usual, and consequently will not completely hide that body. The result will be an annular eclipse, with a ring of sunlight visible for a few moments around the dark disc of the moon. It will be an interesting spectacle, but Americans who want to see it will have to travel far, for it will be visible only near the South Pole. As the sun sets in the vicinity of Australia, New Guinea and Sumatra, it will be seen in partial eclipse, partly covered by the disc of the moon.

No Cause for Excitement

Even were it to be visible in a more accessible region, however, astronomers would not be greatly excited about it, for an annular eclipse is of slight scientific value. The eclipse observations that astronomers travel thousands of miles to make are possible only when the moon completely covers the sun in a total eclipse, and the corona, the sun's outermost layer, is visible around the edge. Such an eclipse is the one that will be seen on August 31 in eastern Canada and New England.

March's second eclipse is one of the moon. On the twenty-second the moon will have completed half a revolution around the earth following the solar eclipse, and then it will partly enter the earth's shadow. As we see the moon by reflected sunlight, its light will be greatly reduced on that night, but that celestial body will be only about nine-tenths immersed in our shadow. Thus it will be a partial eclipse. The eclipse happens after the moon has set for the eastern part of the country so that it will be visible only in the western United States and around the Pacific Ocean.

One very welcome astronomical event, though it is to be attended by nothing visible in the sky, happens on the twentieth, at 2:54 P. M., eastern standard time. This is the vernal equinox. At that time the sun, which has been moving northward among the stars since December, will be directly over the equator of the earth. By time-honored convention this condition has been regarded as the beginning of spring. Because the sun is then on the celestial equator, which is the part of the sky directly above the imaginary line on the earth, it rises directly east and sets directly west. The sun is then above the horizon for just half of the 24 hours, and below for the same length of time. From this fact comes the name "equinox" meaning equal night.

Knowing the dates of the two eclipses, one who knows the ways of the heavenly bodies is in no doubt as to the times of the phases of the moon. A solar eclipse can occur only at new moon, and a lunar eclipse only when it is full. Therefore, the new moon comes on March 7, first quarter on the fifteenth, full moon on the twenty-second and last quarter on the twenty-ninth. This means that the moon will be conspicuous during the evening from about the twelfth to the twenty-fourth.

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ARCHAEOLOGY

Well-Buried Indian Girl Took Pottery to Heaven

WHAT the well-buried Indian girl took to Heaven with her, is revealed in the discovery of an ancient tomb, near the modern village of Xoxocotlán, Mexico.

The child had over twenty pottery vessels, some of them very tiny. There was one stone corn-grinder, with its stone rolling pin, a clay plate to bake the corn-cakes on, two beads, and a little stone idol.

On top of the girl's remains was the skeleton of a dog, which had undoubtedly been buried with her as a guardian to take her soul on its voyage beyond the grave. The burial was found by Alfonso Caso, archaeologist of the Mexican National Museum. The village where it was found is on the lower slopes of Monte Albán. It was on the summit of the same mountain that the recent sensational find of an ancient Indian burial treasure was made.

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BIOCHEMISTRY

Molds Yield Substances Which Promote Growth

NEW EVIDENCE for the existence in plants of a growth-promoting substance resembling the hormones or ductless gland secretions of animals has been reported to the National Academy of Sciences, through the medium of its *Proceedings*, by H. E. Dolk and K. V. Thimann of the California Institute of Technology.

They grew cultures of a mold in closed glass dishes, in such a way that they could pass a slow continuous stream of sterile culture fluid through them, thus draining off a very weak solution of the growth-promoting stuff as the mold plants gave it off. After concentrating and purifying this, they tested its effects on young oat sprouts. They measured its strength by the time required for it to cause the sprouts to bend through a given distance, when the substance was applied on only one side of the growing region, causing more rapid growth on that side.

They have also begun a chemical study of the substance, testing the effects of various reagents on it. They have demonstrated that the substance itself is an acid.

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ANTHROPOLOGY

Japan Opened to Foreign Commerce

"A Classic of Science"

Perry Found the Japanese Cultured and Well Informed Though Isolated From the Rest of the World Since 1600

NARRATIVE OF THE EXPEDITION OF AN AMERICAN SQUADRON TO THE CHINA SEAS AND JAPAN, performed in the years 1852, 1853, and 1854, under the command of Commodore M. C. Perry, United States Navy, by order of the Government of the United States. Compiled from the original notes and journals of Commodore Perry and his officers, at his request and under his supervision, by Francis L. Hawks. New York: D. Appleton and Co., 1857.

KAYAMA YEZAIMAN and his companions seemed to be in the highest good humor, and readily availed themselves of the proffered courtesies of the officers of the Susquehanna, which were accepted and responded to in a manner indicating the most polished good breeding. . . .

Though always preserving a certain gentlemanly aplomb and that self-contained manner which bespeaks high breeding, these Japanese dignitaries were disposed to be quite social, and shared freely and gaily in conversation. Nor did their knowledge and general information fall short of their elegance of manners and amiability of disposition. They were not only well-bred, but not ill-educated, as they were proficients in the Dutch, Chinese, and Japanese languages, and not unacquainted with the general principles of science and of the facts of the geography of the world. When a terrestrial globe was placed before them, and their attention was called to the delineation on it of the United States, they immediately placed their fingers on Washington and New York, as if perfectly familiar with the fact that one was the capital, and the other the commercial metropolis of our country. They also, with equal promptitude, pointed out England, France, Denmark, and other kingdoms of Europe. Their inquiries in reference to the United States showed them not to be entirely ignorant of the facts connected with the material progress of our country; thus, when they asked if roads were not cut through our mountains, they were referring (as was supposed) to tunnels on our railroads. And this supposition was confirmed on the interpreter's asking, as they examined the ship's engine, whether it was not a similar machine, although smaller, which was used for traveling on the American roads. They also inquired whether the canal across the isthmus was yet finished, alluding probably to the Panama railroad which was then in progress of construction. They knew, at any rate, that labor was being performed to connect the two oceans, and called it by the name of something they had seen, a canal.

Never Lost Self-Possession

After refreshments and conversation in the cabin, Yezaiman and his interpreters were invited to inspect the ship, an offer which they accepted with great politeness, and as they came upon deck, notwithstanding there were crowds of officers and men around who could scarce repress the manifestation of their curiosity, the Japanese never for a moment lost their self-possession, but showed the utmost composure and quiet dignity of manner. They evinced an intelligent interest in all the various arrangements of the vessel, observed the big gun and rightly styled it a "Paixhan," and exhibited none of that surprise which would naturally be expected from those who were beholding for the first time the wonderful art and mechanism of a perfected steamship. The engine evidently was an object of great interest to them, but the interpreters showed that they were not entirely unacquainted with its principles. Much of this cool but not unobservant composure may have been affected, in accordance with a studied policy, but yet, there can be no doubt, that however backward the Japanese themselves may be in practical science, the best educated among them are tolerably well informed of its progress among more civilized or rather cultivated nations.

On leaving the cabin, the Japanese dignitaries had left their swords behind, two of which are always worn by those of certain rank in the empire. This gave an opportunity for inspection, on the part of the curious, of these badges of authority, which seemed to be, in accordance with their purpose, more suited for show than service. The blades, however, were apparently of good steel and temper, and highly polished, although their shape as well as that of their hilts, without a guard, was awkwardly constructed for use. The mountings were of pure gold, and the scabbards of shark's skin, remarkably well manufactured. The visit of the governor was prolonged into the evening, and it was seven o'clock before he took his departure, when he and his interpreters left the ship with their usual graceful courtesies, bowing at every step, and smiling in an amiable yet dignified manner. They were evidently favorably impressed with their reception and all they had seen. The studied politeness which marked their intercourse with our officers was evidently not assumed for the occasion, for it is so habitual with them, that in their ordinary relations with each other they preserve the same stately courtesy; and it was observed, that no sooner had Yezaiman and his interpreters entered their boat alongside the Susquehanna, than they commenced saluting each other as formally as if they had met for the first time and were passing through the ceremonials of a personal introduction. While these scenes were in transaction on board, the boats of the squadron sent out by the Commodore were kept busy all day sounding and observing as on previous occasions.

DISCOVERIES

of the chemical elements will continue with

Titanium, Zirconium Hafnium, Thorium

of Group IV. In the next CLASSIC OF SCIENCE

The next day was Wednesday (July 13th), and the visit of the governor was naturally expected at an early hour, in fulfilment of his promise. There was, however, no indication through the morning of his coming, and every thing remained in a state of tranquil expectation. There seemed to be some little movement on the part of the authorities, as far as could be gathered from an observation of the neighboring land. From the opposite shores numerous vessels, loaded with soldiers, crossed to the Uraga side, and a large junk with the usual government flag and insignia put into the harbor. The brisk trade of the bay was carried on as usual, and Japanese boats, both large and small, were moving up and down in constant circulation. The various towns and villages grouped about the bay were thus interchanging their elements of life, and, stimulated into commercial activity by the throb from the busy heart of the great city, poured into Yedo their overflowing abundance. There were no less than sixty-seven junks counted as passing up the bay during the single day.

The weather continued warm, with thermometer indicating as high a point as 87°, but the heat was tempered by an agreeable sea breeze. The view of the shores was much obscured at times by the haze which is said to be so prevalent on the Japanese coast; but in the experience of the squadron the weather hitherto had been remarkably clear, and this day was the foggiest that had been seen since the ships arrived in the bay. Nothing could be seen of the great land-mark—the lofty peak of Fusi—which, by the way, was generally more plainly visible toward the evening than during the day, and was often observed beautifully distinct at sunset, when its summits would glow with a rich halo of crimson light.

The expected visit of the governor occurred at last, at about four o'clock in the afternoon. His highness Kayama Yezaiman, accompanied, as usual, by his first and second interpreters, presented himself, with a thousand apologies for not having come earlier, as the high officer from Yedo had but just arrived. The apologies having been made, the governor exhibited the original order of the Emperor, addressed to the functionary who had been appointed to receive the Commodore. The Emperor's letter was short, and was certified by a large seal attached to it. This imperial epistle, which was wrapped in velvet, and enclosed in a box made of sandal-wood, was treated by the governor with such

CEREMONY OF DELIVERING THE LETTER

—from President Millard Fillmore to the reprsentative of the Emperor of Japan in 1853, performed in a special pavilion erected for the occasion. The letter invited Japan to trade with the United States. Its acceptance by the Japanese led Japan to abandon her policy of aloofness which she had held for more than two hundred years, and began her rapid strides in adopting the ways of the western countries.

reverence that he would allow no one to touch it. A copy of it in Dutch, and a certificate verifying the authenticity of the document, and of the Emperor's seal attached thereto, given under the hand of Kayama Yezaiman, the governor, were also presented. The translations are as follows:

Translation of letter of credence given by the Emperor of Japan to his highness, Toda, Prince of Idzu.

"I send you to Uraga to receive the letter of the President of the United States to me, which letter has recently been brought to Uraga by the Admiral, upon receiving which you will proceed to Yedo, and bring the same to me.

[Here is the Emperor's seal.]

"SIXTH MONTH IN 1853."

Translation of certificate of Kayama Yezaiman, governor of Uraga, verifying the authenticity of the Emperor's letter and seal.

"You can rest assured that the high officer who has been accredited by the Emperor of Japan himself, and who consequently comes here to Uraga from Yedo for the purpose of receiving the original and translated letters, is of very high rank, equal to that of the Lord Admiral. I do assure that.

"KAYAMA YEZAIMAN."

The governor, in the course of the conference, took care to state that the person appointed by the Emperor had no authority to enter into discussions with the Commodore, but was merely empowered to receive the papers and convey them to his sovereign. He also stated that he had made inquiry as to the practicability of changing the place of meeting, and said that, as a suitable building had already been erected, it would be inconvenient to change. The Commodore was prepared for this reply, and as he could not know whether any treachery was intended or not, he had determined to provide, as far as he could, against every contingency, and had therefore ordered the surveying party to examine the little bay at the head of which the building had been erected for his reception. The officer sent upon this service promptly performed the duty, and reported that the ships could be brought within gun-shot of the place, where great numbers of the people had been observed employed in the completion of the building, in transporting furniture, and in otherwise preparing for the occasion.

A Commodore's Dignity

The governor offered to accompany a boat to the place appointed for the reception, but this was declined, and he was informed that, as it did not befit the dignity of the Commodore to proceed a long distance in a small boat, the squadron would be removed to a position nearer the building designed for the reception. It was then agreed that the Commodore and his party should leave the ships between eight and nine o'clock the next day (Thursday), although the Japanese seemed particularly anxious that the interview should take place at an earlier hour, assigning as a reason that the heat of the day might thus be avoided.

The question was now asked as to how many officers would accompany the

Commodore on the occasion, to which they received the answer that he would be followed by a large retinue, since it was the custom of the United States when an officer of high rank bears a communication from the President to the sovereign of another country, for him to go with such an attendance as will be respectful to the power to which he is sent. Accordingly, the governor was informed that all the officers who could be spared from the squadron would accompany the Commodore, as the greater number would imply the greater compliment.

In the course of the conference, the Japanese dignitaries showed their great regard for ceremony, by adverting to various minute points of etiquette in reference to the approaching reception. They announced that all the Japanese officers would be clothed in full official costume, and not in the dresses worn on ordinary occasions. They seemed to be considerably troubled because they would not be able to seat their visitors, on the morrow, in the same kind of arm chair as that then occupied by themselves in the cabin, and apologized for not having any such. They were no less anxious on the score of the wines and brandies, and begged that they might be excused for not offering the same as they had been regaled with, since the country did not possess them. They were told to dismiss their solicitude on these points; that, as the practice of hospitality, and manners and customs, necessarily differed in different countries, it was not reasonable to expect to find American habits prevailing in Japan; and that the Commodore would be satisfied to be seated in the same manner as the dignitary appointed to meet him, while the other American officers would content themselves with such seats as were provided for their equals in rank among the Japanese.

Then they made some inquiries in regard to the minute details of the approaching ceremony, as to whether the Commodore would present the President's letter directly from his own hand into that of the Japanese commissioner, whose name and title, by the way, were now announced as Toda-Idzu-no-Kami, First Counsellor of the Empire.

It was asked whether the Commodore would immediately return to his ship after delivering the letter, and also when he would come back to Japan to receive an answer. The Chinese interpreter, Mr. Williams, showed them a map or plan of Yedo, which they said must have been drawn some seventy years ago, as the capital had changed much since the plan was made, having greatly increased in size, and much improved. They, however, recognized on the plan various conspicuous places, and pointed them out very readily, as if politely willing to gratify the natural curiosity of their company.

The whole conference had lasted about two hours and a half, and when the Japanese functionaries rose to depart it was already evening. They left the ship with the usual polite courtesies, bowing, as usual, at every step; and the chief interpreter, Hori Tatznoske, who had evidently a great aptitude for the acquisition of foreign languages, mustered English enough to say very distinctly as he departed, "Want to go home."

Science News Letter, March 5, 1932

BIOCHEMISTRY

New Source of Vitamin A Discovered in Plant Seeds

A NEW rich source of vitamin A or a substance having vitamin A's growth-promoting function exists in the seeds of the plant *Bixa orellanax*, D. H. Cook and Joseph Axtmayer of the University of Porto Rico have reported to *Science*.

The seeds of this plant yield annatto, a coloring matter used chiefly in butter and cheese, and also in dyeing silks and preparing chocolate. Actually, these investigators point out, there are two pigments or coloring substances obtained from the seeds of this plant. The less well-known one, orellin, is associated with vitamin A activity, they found. Diet studies with rats showed that it would maintain normal growth as well as vitamin A.

"It is unknown at this stage of the investigation whether we are dealing with vitamin A as such, carotin or some related pigment, or a new substance which can function as vitamin A in the body," the investigators stated.

Science News Letter, March 5, 1932

PHYSICS

New Discoveries Promised by Photoplates That "See Heat"

Knowledge of Elements Expected to Be Extended as Dye Used Increases Sensitivity to Infra-Red Radiation

NEW photographic plates that "see" heat, take pictures in the dark, and have to be kept packed in ice until used, promise to usher in a new era of photography and spectroscopy.

To the Optical Society of America Dr. C. E. Kenneth Mees of the Eastman Kodak Company demonstrated the results of using a new dye discovered at his laboratories for sensitizing plates to infra-red radiation.

A photograph of a flat iron taken in the dark with its own heat rays was exhibited.

More important to science was the report of Drs. W. F. Meggers, C. C. Kiess and C. J. Humphreys of the U. S. Bureau of Standards who, using the new plates, discovered many new spectroscopic lines of 36 chemical elements. These new "flags" of the elements were found in the region of the spectrum lying between wavelengths of 9,000 and 11,200 Angstrom units. The plates sensitized with the new dye record a wide band of invisible heat "light" from 8,000 to beyond 11,000 Angstroms, with a maximum at 9,600 Angstroms.

Greater Speed

Not only do the new infra-red sensitive plates "see" farther into the infra-red than ever before, but have a speed a hundred to a thousand times that of the best plates that have ever been made before for the infra-red.

Use of the new plates is expected to extend the knowledge of the elements greatly. The Bureau of Standards physicists declare the Eastman Research Laboratories discovery "is recognized as beginning a new era in infra-red spectroscopy."

It was also revealed that the new plates have allowed astronomers to discover iron lines in the stars that are known as B and F stars. It is possible that important new astronomical discoveries will be forthcoming just as soon as the new plates are used as ammunition in the large photographic telescopes of America. They may see stellar bodies that human eyes and ordinary photographic plates can not detect.

The name of the new dye used to sensitize the plates is Zenocyanine. It is much more sensitive and reveals more of the spectrum than dicyanine, which held first place among infra-red sensitizers for a decade, or neocyanine, which was discovered in 1926. The dye must be synthesized just before use and the plates must be kept in cold storage or packed in ice, because the heat from the sides of an ordinary container at room temperature will fog the plates.

Science News Letter, March 5, 1932

METEOROLOGY

Individual Fog Droplets Measured for First Time

THE SMALLEST of the fog particles that hinder flying and ocean travel are so minute in size that 25,000 of them could be placed end to end within the space of an inch.

This was discovered when Massachusetts Institute of Technology scientists at Round Hill, Mass., research station measured and photographed individual fog droplets for the first time. Henry G. Houghton, Jr., made the fog measurements with a special microscope that catches on a greased slide the individual droplets as flies are trapped on sticky paper. Natural fog is allowed to drift across the flat glass slide upon which the microscope is focussed and finely ruled lines and cross lighting allow the measurement of a hundred or more fog particles in a few minutes.

Fogs are not composed of particles all of one size, although one size usually is most prevalent. Different fogs have different particle sizes, but they are found to range from two twenty-five-hundredths to one twenty-five thousandth of an inch in diameter.

The measurements were made as part of a comprehensive study of fogs, directed by Prof. Edward L. Bowles and undertaken by Mr. Houghton and Dr. Julius A. Stratton.

Practical aids to aviation fog signalling may result, as large-particle fogs are known to be penetrated most easily by red light while fogs of very small droplets are best signaled through by green light. Most sea fogs are caused by the formation of water about invisible grains of salt tossed into the air from breaking waves, other studies at the Massachusetts Institute of Technology revealed.

Science News Letter, March 5, 1932

SCIENTIFIC AWARD

$10,000 Annual Prize Awarded Dr. Langmuir

A CHECK for $10,000 and a gold medal have been given Dr. Irving Langmuir of the Research Laboratory of the General Electric Co. as the 1931 award of the magazine *Popular Science* Monthly for notable scientific achievement.

A committee of prominent American scientists singled Dr. Langmuir out from hundreds of candidates in recognition of his many contributions to pure and applied science, among which the invention of the nitrogen-filled incandescent electric bulb and the atomic welding process are conspicuous.

Science News Letter, March 5, 1932

MEDICINE

Invisible Germ Destroyer Is Newest Ally of Surgeon

Bacteriophage, Which Develops Spontaneously in Wounds Aids Healing of Tissue by Eating up Disease Organisms

NEWEST ally of the surgeon in healing infected wounds is the bacteriophage, invisible organism which destroys disease germs by eating them. Such cases in which bacteriophage apparently aided healing are described by Dr. Fred H. Albee of New York, in the *American Journal of Surgery*.

Dr. Albee explained that he had formerly treated infected wounds, such as those following injury, compound fractures, and cases of osteomyelitis, a bone infection which runs a very tedious course, by the Carrel-Dakin method, found successful during the war. By this method the wounds are washed out frequently with an antiseptic solution, the idea being to clear up the infection by killing the germs in the wound. After this the wound was supposed to heal. More recently Dr. Albee tried a new method, proposed by Dr. H. W. Orr of Lincoln, Nebr., which he found even more successful. This treatment is the direct opposite of the Carrel-Dakin method, and consists chiefly in sealing the wound with gauze and vaseline and leaving it alone for weeks. It is particularly suitable for cases of infected fracture of bone, as the long rest in one position gives the fractured bones a good chance to knit.

In searching for an explanation for the excellent results he was getting with the new treatment, Dr. Albee recalled what he had read about the germ-killer, bacteriophage. After germs have been growing for some time, either in the body or on an artificial medium in the laboratory, this bacteriophage develops and destroys the germs, apparently consuming them entirely, as no trace of them remains. Dr. Albee thought this was what happened in the infected wounds treated by the new method of prolonged rest and non-interference.

He proceeded to test this theory with the aid of a bacteriologist, Marjorie Patterson of the laboratories of the New York Post-Graduate Medical School. Pus taken from the infected wound before the first dressing was put on was examined. Several types of organisms were found in it. Some of these could be destroyed by stock races of bacteriophage. After further bacteriological procedures a bacteriophage was obtained from the pus which destroyed stock strains of germs and also the strains obtained from the wound itself. There are now forty-eight races constantly available. Some of these have been isolated and bred from wound cultures, but the laboratory's favorite hunting ground is in sewage and cesspools, for certain races of phage are always present in the intestinal tract of man.

From this investigation, Dr. Albee concluded that the bacteriophage developed spontaneously in the wound and destroyed the germs there, or at least destroyed their ability to harm the body tissues. So now, if infected wounds prove stubborn about healing, he adds doses of bacteriophage to the treatment with good results. He emphasized that the bacteriophage must be specific for the kind of germs found in the wound, and he also warned physicians to be conservative in their adoption of this phase of the treatment. It should not be undertaken without the cooperation of a bacteriological laboratory.

Science News Letter, March 5, 1932

MEDICINE

Lice Live on Scientists In Study of Typhus Fever

WEARING 200 active lice strapped to the leg below the knee all day would seem pretty much of an ordeal to most persons, but to two scientists at the U. S. National Institute of Health, it is just all part of the day's work.

The scientists, Dr. R. E. Dyer and his assistant, Dr. W. H. Workman, have been doing this for several weeks. They are trying to establish a colony of body lice in order to carry on scientific experiments in which they hope to find whether or not lice can transmit the American variety of typhus fever. The lice are rather particular as to their food, and like human blood best. Guinea pig blood seems to poison them. Monkey blood is satisfactory to the lice, but the monkeys are not fired with scientific zeal, so the two men had to take on the lice themselves.

The pesky insects are put in tin pill boxes the tops and bottoms of which have been replaced with bolting cloth of about 80 mesh. One of these boxes is strapped to the leg below the knee and worn there during the day. At night the boxes are kept in a coat pocket to keep the lice warm. They lay eggs and hatch out more lice in the little pill boxes.

When they have enough lice Dr. Dyer and Dr. Workman expect to infect them with typhus fever and see if the lice can give the disease to monkeys by biting them. Dr. Dyer and associates have already established the fact that typhus fever in America is transmitted by fleas, but they do not know yet whether lice may also transmit it, as they do in European countries.

Science News Letter, March 5, 1932

GEOLOGY

Conservatism Urged in Evaluating Radium Ore

WHILE REPORTS indicate that the recent discovery of important deposits of pitchblende in the Canadian Northwest Territories, will have great significance in the world supply of radium, conservatism is being urged in evaluating immediate effects.

Hugh S. Spence of the Canadian Department of Mines, recently stated that samples of the ore have shown uranium oxide contents ranging from 30 to 62 per cent., which are equivalent to one gram of radium in about 13 to 16½ tons of ore. One gram of radium is worth approximately $50,000 to $70,000. The value of radium in a ton of ore would range, according to these figures, from less than $4,000 to more than $10,000. These are gross values from which high costs of transportation, refining and selling would have to be met.

These figures should be taken into consideration in reading the article in SCIENCE NEWS LETTER, Feb. 27, 1932, p. 132, in which through typographical error it was stated radium ores would assay $70,000 a ton when it was intended to read $7,000 a ton.

For details of the discovery of radium ore in the Canadian wilderness, see SCIENCE NEWS LETTER, Feb. 13, 1932, p. 104. In the third paragraph of that article, the last phrase should read: Gold is worth $18.84 an avoirdupois ounce.

Science News Letter, March 5, 1932

ORNITHOLOGY

Nature Ramblings

By FRANK THONE

Singers of the Frosty Dawn

WHERE the snows have melted away from the pastures and fallow lands, there the hardy early wayfarer may find the horned larks. If he walks quietly he will hear their songs—thin, reedy, sweet little pipings; not the full-throated warblings of their later-coming and larger brethren, but all the pleasanter now for being heard in a desert season.

The "horns" that give the little lark its name are really tufts of feathers, one above each ear. They are so small that normally one cannot see them with the naked eye at ranges within which the bird will permit one to approach. But a pair of opera glasses or a low-power field glass will make them easily visible. Such an optical aid will also make it possible to study the interesting black markings on brow, cheek and throat. The ground-hue of the head, aside from these black markings, is either white or yellow; the rest of the bird's body is "sparrow-colored." Both male and female have the "horns" and the head markings; immature young lack them and look a good deal like sparrows.

In some regions the horned larks hardily stay the winter through. Where the severity of the storms does drive them out they do not go far. They are not afraid of snow and cold, and can pick up a thrifty living on weed seeds and wild fruits. They are strictly ground dwellers, even perching on the bare earth at night when they sleep. This keeps them down where they can do the most good as destroyers of next year's potential weed crop.

Science News Letter, March 5, 1932

PSYCHIATRY

Playing Hooky From School Due to Diseased Personality

A NEW reason why children play hooky from school has been brought to the attention of the American Orthopsychiatric Association by Dr. I. T. Broadwin of New York City.

Some children, Dr. Broadwin explained, stay home from school because they are suffering from a diseased personality, a neurosis, psychiatrists call it. The truancy is merely a symptom of the disease. By proper treatment this type of personality may be altered to a more normal one, Dr. Broadwin said. The truancy may disappear anyway, he added, but without treatment, the diseased condition will remain. Of course not every truancy is of this type.

This truancy is a peculiar kind. The child stays away from school for long periods. Usually he is at home, near his mother. He doesn't want to give any reason for playing hooky, but says it is a "crazy" reason. The psychiatrist, by getting down to the child's level and not trying to argue with him, finds out that he stayed home because he was afraid something terrible would happen to his mother, like the house being on fire and her getting burned, or her getting run over and killed.

This child is the type that lives an intense fantasy life and that has very intense hates and loves. Really, although he may be anywhere from eight to thirteen years old, he has the instincts of an infant, particularly that of wanting to stay close to his mother, Dr. Broadwin explained. He does not think of it in just that way, but rather thinks that he must be close to his mother so that nothing will take her away from him.

While this is only one special type of truancy, Dr. Broadwin said that truancy in general should be studied with regard to the child's attitude toward his home and parents and the school teacher.

Science News Letter, March 5, 1932

ENGINEERING

Weird Leather Costumes Protect Electric Workers

See Front Cover

DRESSED in the clothes of imagined creatures from a distant planet, these power plant operators open and close the switches of transmission lines that bring power for electric lamp and industrial motor. The costume, a new invention of safety engineers, is designed to protect the wearer from flashes of fire that occur when high voltage conductors become short circuited.

After experiments with asbestos and other materials from which safety clothing is usually made, engineers of a power company in Cincinnati chose white chromium leather as the best material for these suits.

Science News Letter, March 5, 1932

• First Glances at New Books

Physiology.

JOURNAL OF CELLULAR AND COMPARATIVE PHYSIOLOGY—E. Newton Harvey, Managing Editor—*Wistar Institute.* Bi-Monthly, $5 per volume (foreign, $5.50). Physiologists will welcome this new addition to the Wistar Institute's excellent series of periodicals, occupying as it does a field not satisfactorily taken care of up to the present time. Encouraging also is the statement by the publishers: "It is recognized that prompt publication is essential, and the aim will be to issue papers within two months of acceptance."

Science News Letter, March 5, 1932

Wood Technology

YOU CAN MAKE IT FOR PROFIT—H. Conrad Hoover—*Government Printing Office,* 48 p., 10c. The enterprising unemployed man who gets hold of this booklet will not remain long without a job. It tells how to build articles for which he should be able to find a sale even during times of depression. They include racks for canned goods and vegetables, clothes basket stands mounted on rollers, breakfast tables and benches, book cases, storage chests, window seats, garden furniture and toys. The booklet is the third publication of its kind of the National Committee on Wood Utilization.

Science News Letter, March 5, 1932

General Science

ANNUAL REPORT OF THE DIRECTOR OF THE NATIONAL PARK SERVICE—Horace M. Albright—*Govt. Printing Office,* 150 p., 25c. The education and recreation of the people in the American national park system is one big business that has not been cut into by the depression: each year the number of visitors increases, with corresponding increases in needed facilities for handling this great volume of traffic and for seeing that the visitors and the natural features they come to see make the necessary contacts. A year's progress in this work is here summarized.

Science News Letter, March 5, 1932

Philosophy of Science

THE NATURE OF PHYSICAL THEORY —A STUDY IN THE THEORY OF KNOWLEDGE — Victor F. Lenzen—*Wiley,* 295 p., $3.50. Though the ideas elaborated here were developed in teaching physics, they derive also in part from Bernstein, C. I. Lewis, Josiah Royce, Huntington, and particularly, Bertrand Russell. Fichte, Hegel and Bosanquet, Reichenbach, Schlick and H. Dingler are said to supply the philosophical background on which is laid the creations of the present generation of physical revolutionists. The book, in the words of the author, "stands between the popular expositions of physics and the detailed treatises for experts."

Science News Letter, March 5, 1932

Entomology

THE BUTTERFLIES OF THE DISTRICT OF COLUMBIA AND VICINITY—Austin H. Clark—*Government Printing Office.* 337 p., 64 pl., $1.50. The curator of echinoderms at the U. S. National Museum has long made the beautiful sea lilies his special subject; but his "second specialty" has been the study of the flowers with wings, the butterflies. In the present volume he has summed up the results of many years of observation in and around the District of Columbia. Notable among the many excellent photographic plates are wing-prints made in the dark by some strange emanation from the wings themselves.

Science News Letter, March 5, 1932

Physics

APPLIED GYRODYNAMICS—Ervin S. Ferry—*Wiley,* 277 p., $4. The author's announced purpose of bringing gyrodynamics, the brain child of pure mathematics, out from behind the integral signs and presenting it to those having the mathematical equipment of the ordinary graduate of engineering or physics has been well carried out. The instrument that pilots ships, torpedoes and airplanes among its many robot achievements will now be better and more widely understood.

Science News Letter, March 5, 1932

Engineering

PROJECTING SOUND PICTURES — Aaron Nadell—*McGraw-Hill,* 265 p., $2.50. This is an interesting presentation of the "background" of talking movie apparatus and is intended especially for the operator and theater owner. The book gives a picture of what happens in the vacuum tubes and coils of wire rather than explanations of how to operate and repair the apparatus.

Science News Letter, March 5, 1932

Mathematics

QUEEN OF THE SCIENCES—E. T. Bell —*Williams and Wilkins,* 138 p. $1. Gauss crowned mathematics queen of the sciences and Prof. Bell in this inaugural volume of the Century of Progress Series issued in anticipation of Chicago's intellectual world fair festivities next year engagingly upholds the primacy of this science. The author's two identities contribute to this survey of algebra, geometry, calculus, arithmetic and the other more advanced branches as they have blossomed in the golden age of the past century. For he is professor of mathematics at the California Institute of Technology and he is also John Taine, author of novels "Green Fire," "The Purple Sapphire," etc. Those who desire understanding of the place of modern mathematics in science should read this book.

Science News Letter, March 5, 1932

Essays

THE DOCTOR LOOKS AT LIFE AND DEATH — Joseph Collins — *Farrar and Rinehart,* 315 p., $3. As usual, Dr. Collins writes entertainingly on subjects of general interest. This, his latest book, is chiefly concerned with religious, psychiatric and sex problems. It will undoubtedly achieve considerable popularity.

Science News Letter, March 5, 1932

Metallurgy

SYMPOSIUM ON MALLEABLE IRON CASTINGS—*American Foundrymen's Association and American Society for Testing Materials*—122 p., 75c. A collection of papers from a recent joint meeting which provide authoritative data in concise form on the properties of malleable iron castings. Similar publications are planned to cover alloy and carbon steel castings, gray iron and other iron castings and castings of non-ferrous metals.

Science News Letter, March 5, 1932

Mathematics

TRIGONOGRAPH—J. S. Ronay, 50c to $5. A new graphical trigonometric function table and calculator.

Science News Letter, March 5, 1932