Science News-Letter

Reg. U. S. Pat. Off.

The Weekly Summary of Current Science

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Edited by Watson Davis
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March 5, 1927

VULCANOLOGY

Measure Heat of Volcano

A new method of ascertaining the temperature of volcanic fires is being undertaken by Dr. T. A. Jaggar, director of the Hawaii Volcano Observatory, in the crater of Kilauea. Borings ten feet deep and 1,000 feet apart are being made in the solid rock floor of the crater and as each boring is completed, the temperature at the bottom is taken and recorded, following which the top of the hole is capped with a metal ring in order to preserve it for future readings. It is expected by means of these borings to solve a problem which has baffled scientists ever since their attention was first directed to a study of volcanoes and earthquakes.

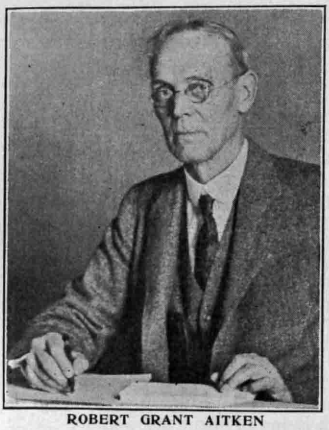
Dr. Jaggar has three objects in boring into the crater of Kilauea. He wishes to ascertain the relation of increase in temperature to increase in depth, to discover if there is any difference between the temperatures in the different holes at the same depth and to see to what extent heat is produced by slow oxidation in the lava.

Lava cools very slowly. This is evidence by the fact that although Mauna Iki flowed in 1920, there are cracks in the lava hot enough today to burn anything thrown into them.

Dr. Jaggar is as yet uncertain just what results will be worked out from data obtained through these borings. He thinks it quite possible that some of the holes may show a seasonal or tidal heating or cooling. Volcanic eruption might even be forcast by the sudden rise in temperature in these holes.

Dr. Jaggar is devoting his life to volcanic research. In order to be in touch with the activities of Hawaii's volcano day and night, he has established his home almost directly on the edge of its crater where he can watch its constantly varying moods through the seismographic instruments, as well as by personal observation of its interior.

ASTRONOMY



ROBERT GRANT AITKEN

Star Measurer

The layman usually imagines that an astronomer spends all his time gazing at the heavens through a telescope, and is surprised to learn that a large part of modern astronomical observations are made by photography.

But Dr. Aitken would fit in with the usual conception, for his work is visual. His is one branch of astronomy in which the photographic plate has not proved superior to the eye, for he is the leading authority on double stars. Out of every 18 stars that we see in the heavens, at least one consists of two separate orbs that revolve around their common center. For nearly 30 years he has been observing the motions of such bodies with the 36 inch telescope at the Lick Observatory of which he is associate director, and in this time has discovered over 3,000 new ones.

Dr. Aitken is a native Californian; he was born at Jackson on Dec. 31, 1864. In 1887 he graduated from Williams College. After a few years as a mathematics teacher, he went to the Lick Observatory in 1895.

ARCHÆOLOGY

Discovery Baffles Savants

Little tablets of clay with cryptic signs on them, vases carved in the form of death's heads, and other strange and ancient looking objects dug up in a field in the French village of Glozel, have started off one of the most remarkable controversies in the history of science.

During recent months a number of prominent French scientists have journeyed to Glozel under the guidance of Dr. A. Morlet, who is in charge of excavations at the site of the discovery. On reaching the field, Dr. Morlet has suggested that each scientist choose his spot and make a trial excavation. And the experts have proceeded to unearth for themselves some of the mysterious objects, which seem to be hidden there in unending profusion.

As a result of their observations, some French scientists now pronounce Glozel one of the most important archæological discoveries of a hundred years. As to what the great collection of objects means, however, the savants find it impossible to agree.

The most puzzling finds are many small tablets of clay on which rows of marks have been cut—crosses, and half circles, and other peculiar signs, like a strange kind of writing. The layer of earth in which the pottery and these tablets have been found is pronounced by some French experts as certainly of the New Stone Age, before man learned to use metal.

This raises the question of whether these are alphabet writings and whether the origin of the alphabet must be set back far earlier than the Phoenician times, to the cave man era.

Why not admit, says one French scientist, M. Esperandieu, that men who were sufficiently developed in intellect, and artistic enough, to make the carvings of stone age caves and the Glozelian carvings,

(*Just turn the page*)

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CLASS STUDY HELPS

Articles on following pages will be found especially useful in science class work:

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Discovery Baffles Savants

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might have had the idea of rendering the sounds of speech by signs? But so far attempts to read the signs, made by one or two scientists, have not revealed certain clues to a prehistoric alphabet system.

Another scientist, Dr. Marcel Baudouin, putting two and two together from various bits of evidence, concludes that the carvings were made with tools of metal, and that the entire place is a relic of the Age of Bronze, perhaps as old as 5000 B. C.

An expert on Roman antiquities, M. Camille Jullian, believes that the signs on the little tablets are cursive Latin, dating back only to the Roman Empire, about 300 B. C. "The inscriptions could be translated, in part at least," he says.

M. Jullian's explanation of the vases, carved pebbles, polished arrow points, and little clay statuettes, is that in Roman times sorcerers sometimes dug up prehistoric relics and used them in their magic rites. The little tablets are engraved with magic formulas and incantations, he believes.

M. Seymour de Ricci, one of the visitors at Glozel who watched excavations there and who saw the large collection of articles in M. Morlet's museum, found the place too remarkable.

"I will not conceal from you," he told Dr. Morlet, "that apart from the fragments of stone, and perhaps—though I am not sure—a piece of polished axe, all the rest is a fake."

This opinion, however, is not held by the majority of the scientists who have examined the discoveries.

Science News-Letter, March 5, 1927

Sugar can now be made from wood.

Parrots are captured and tamed by African natives.

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Does the Moon Affect the Weather?

By W. J. HUMPHREYS

Many people think that the weather can be forecast by watching the moon. In the following article the professor of meteorological physics at the U. S. Weather Bureau tells of some of these mistaken ideas, and why they are wrong.

If you ever had the good fortune to live in the country, or even to spend a few summers in the mountains, you surely are familiar with the confident assertion that as soon as the moon changes the weather will get better. If the fields are parched, there will be rain when the moon changes; if they are too wet the change of the moon will bring fair weather and clear skies. Whatever you want in the way of weather, that, they tell us, you will get, when the moon changes—a cheery, hopeful expectation inherited from grand-dad's grand-dad, an ancient legacy of faith, misplaced to be sure, but so comforting that it were a pity to destroy it, if we had nothing so good or better to offer in its stead. But let us destroy it, for really the moon does not control the weather, and there are indeed much better guides to follow than the olden tradition that it does.

But how do you know, the faithful ask and have a right to ask, that the moon does not influence the weather? It is certain that the great tides of the ocean are caused mainly by the moon; and even the continents, mountains and all, are raised and lowered, twice a day, nearly a foot by the tug of the moon. Surely, then, so the moon advocates insist, the tides of the light, mobile atmosphere must be many times larger—so large indeed as to produce great changes in the weather. All this appears very reasonable, we must admit, but it happens that the atmosphere does not behave that way, and so far from it, indeed, that its tides are so minute that they can be detected only by the most searching and delicate means. We must give up the idea, then, that the moon pulls the atmosphere about in great ebbs and flows, and thereby affects the weather—must give it up, because, on careful examination, we find that nothing of the kind happens.

But how about the heat from the moon, our friends, the faithful, inquire with good reason; isn't that greater at full moon than at new moon, and enough greater to change the weather? yes, we must answer, it is greatest at full moon, but even then, as shown by direct measurement of the moon's radiation, so small that it can alter the temperature of the earth by only one or two thousandths of a degree, a change so trivial that no one could be certain of it, nor would take any account of it if he were. In quite a different, and hidden, indirect manner, however, the moon changes the temperature of the earth manyfold as much as by its own conspicuous radiation. It does so in this way: Since both it and the earth swing around the sun together, and at the same time rotate about each other like a big weight and a little weight at the two ends of a stick hurtling end over end through the air, it follows that at full moon, the time when the moon is on the opposite side of the earth from the sun, the earth itself is closest to the sun, and at new moon farthest away. This action of the moon changes, between full moon and new moon, the distance of the earth from the sun by about 6,000 miles. That is, at full moon the earth on the average is about 6,000 miles nearer the sun than it is at the time of new moon. Well then, says our moon friend, if you change your distance from the fire that heats you by 6,000 miles, surely you will make a big change in your temerature. Truly, 6,000 miles seems a long way when thought of in terms of travelling over the face of the earth, but it is a mighty little part of our 90-odd million miles from the sun, and the temperature effect of this relatively small change in the total distance from our great sources of heat is corresponding-

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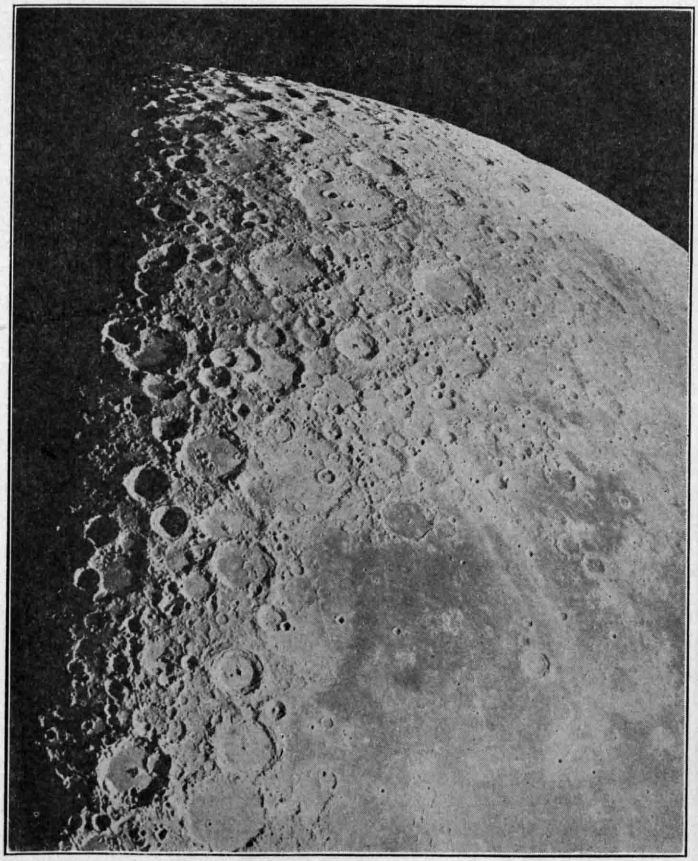

THE MOON AS IT IS TO THE ASTRONOMER. Photograph made by the great hundred-inch reflecting telescope of the Mt. Wilson Observatory—the largest in the world.

The Moon and Weather

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ly minute, in fact only about one-fiftieth of a degree, far less than one measures on any ordinary thermometer, and much too small to be noticed in connection with the weather.

Perhaps, now, our moon champion will offer another and very pretty bit of evidence in favor of the idea that the moon greatly affects the weather. Why, he says, many a time I have seen the moon just eating up the clouds. The sky was nearly covered with clouds at sundown, and then in less than an hour the moon was shining bright and there scarcely was a cloud to be seen. The moon had devoured them all, and surely we must agree that the weather is different under a clear sky from what it is under a cloudy one. Of course, we agree to that, for the difference is very real, and we agree, too, to the statement that often a sky that is considerably clouded at and before sunset is *seen,* during the light of the moon, to clear off rapidly as the twilight deepens. But we do not admit that the moon had anything to do with causing the clouds to disappear. It just enabled us better to see them getting smaller and fewer and farther between.

To What Race Do You Belong?

Race determined
by chemical reactions
of the blood

See the next issue of the

American Journal of Physical Anthropology

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THE WEATHER MAN DOES USE A TELESCOPE, but not to observe the moon. This shows James M. Brady, of the U. S. Weather Bureau at Washington, observing a pilot balloon with a theodolite. Twice a day, at Washington and a number of other places, these small balloons are sent up and watched till they disappear from sight, to determine which way the air high overhead is moving.

This is how it all comes about: When the sun goes down, clouds cool faster than the dry air. They lose heat and also chill the air they are in. This chilled air contracts, as cooled things do, becomes correspondingly denser, and sinks to lower levels, pulling the cloud particles along with it. As it sinks it gets warmer and warmer, and stops sinking and warming only when it comes to the same temperature as the air that then surrounds it. Now, as the sinking air gets warmer, of course the cloud droplets in it evaporate and the cloud disappears. The whole process is very simple and evidently happens just as well when the moon is below the horizon as when it is above. The difference is with ourselves. We don't see so clearly the vanishing of clouds on a dark night as on a bright one. In fact, we scarcely see it at all except when there is a moon to make the clouds distinctly visible. And so it happens that we mistakenly attribute the disappearance of the clouds to some action peculiar to the moon, when as just explained, the moon has nothing to do with it.

The moon then does not make big tides in the air; it does not in any way appreciably affect the temperature of the atmosphere; and although it seems to dissipate clouds—to eat them up, as we say—it does nothing of the kind. We are sure, therefore, after all this, that the moon does not noticeably control the weather. But our moon friend is not so sure of it. In fact, he is not sure of it at all, and frankly tells us that no matter what our argument the real proof of the pudding is in the eating, and he is absolutely certain that when the moon changes the weather changes, and that it seldom changes without a change of the moon. In both these cases he is absolutely right, not because the moon changes the weather, but because as both are always changing they have to change together. You see, there are only about 28 days from new moon to new moon, and in that time the moon shows four changes, as they ordinarily are counted, that is, first quarter, full moon, third quarter, and new moon; in short, one change every seven days. Besides, these changes are not abrupt affairs, but, as we usually observe and note them, each is spread over at least two or three days. Then, too, those who forecast the weather in this manner generally give it a leeway of a few days in which to make good. Our moon friend, therefore, however honest his belief, really is playing the game of "heads I win, tails you lose," for as all the time is used up, it would be impossible to find any date on which a change of the weather could occur without being close to some change or other of the moon.

Well, then, if we can't trust the change of the moon to bring a change of the weather, what can we trust? We can trust two things: In the first place, weather commonly goes in short spells, at least over the more densely populated portions of the temperate zones. That makes for abundant vegetation and good crops—one reason why these places are densely populated. Here the weather usually is fair a few days, and then cloudy to foul for a day or two. This is the rule, and so whatever the weather, it is apt but not certain, to change some time soon, but not for long—another change will quickly come, and others without end. The second thing we can trust in this connection, not as an infallible guide, but as by far the best we have, is the official forecast of the coming weather issued by the Weather Bureau. These forecasts are not infallible, as just stated, but their failures nearly always concern trivial matters. When a cold wave, a killing frost, a destructive hurricane, a devastating flood, or any other major weather phenomenon of real importance is officially predicted it is practically certain that the prediction will be 100 per cent. correct.

But, says our friend, what about dry moons and wet moons, that tell

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The Moon and Weather

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us what sort of weather we are going to have for nearly a whole month? You know, he says, that when both horns of the new moon point up it can hold lots of water without spilling, and therefore brings enough to furnish a dozen rains or more. On the other hand when the new moon stands on end, or nearly so, it is a dry moon. It can hold but little water, and, of course, for the next three or four weeks there will be very few rains, and even these will be light. Yes, we tell him, we heard all that long ago, and we also heard forecasts and explanations just the reverse of his: That is, we heard some people say, as he does, that when both horns of the new moon point up here will be lots of rain; and we heard others say, just as positively, that the whole month will be dry, because when both horns are turned up, very little water can spill out. Similarly, these others called the tilted new moon wet and not dry, because being tilted it must spill out abundant rains. In short, while the moon weather-prophets all agree that there is a wet moon and a dry moon they differ completely as to which is which; what the one insists is a dry moon the other declares to be a wet moon, and what the first calls a wet moon the second calls a dry moon. Each is wholly wrong, but their average is exactly right, for there is no wet moon and no dry moon. If there were, then since the pointing of the new moon's horns is the same everywhere along any parallel of latitude, wet spells and dry spells would not be scattered irregularly over the earth as they actually are, but form continuous belts around the world, which certainly they do not. Furthermore, careful studies of the records kept at hundreds of weather stations all over the earth show that neither the pointing of the new moon's horns, nor any of the moon's changes, has the slightest relation to warm weather or cold, wet or dry, fair or foul.

The moon is a wonderful theme in song and story, in love and war, in sentiment and science, but for all that it never did, and it never will, have anything to do with causing or changing the weather.

Science News-Letter, March 5, 1927

The entire Bible has been printed in Esperanto.

The ancient Assyrians put rolling pins under sled runners, before the days of the wheel, to increase their efficiency.

MINERALOGY

Anti-Evolution Fails Again

North Carolina has been added to the list of states in whose legislatures anti-evolution bills were introduced this winter, only to be dropped or defeated. The Poole bill, which was the most radically anti-scientific measure of this year's crop, was not even formally opposed by representatives of the State educational institutions when it was brought before the committee on education of the House for consideration. Its supporters spoke at some length in its favo. after which two impromptu speeches were made against it. The committee then voted 25 to 11 to report the bill unfavorably, and later its sponsor withdrew it altogether. By its provisions, the bill would not only have prohibited teaching evolution, but would have virtually compelled teachers to forbear from teaching that the earth is round and that it revolves about the sun.

The committee on education of the State House of Representatives of Oklahoma reported favorably on an anti-evolution bill, but the measure received short shrift on the floor, being defeated by a vote of 46 to 30.

North Dakota's anti-evolution bill came to an ignominious end when the state legislature's committee on education got their hands on it. The committee unanimously recommended its demise, and the house approved without a dissenting vote. The supporters of the measure held their peace while the majority of the legislators sent it into the limbo whither similar bills from Arkansas, Missouri, New Hampshire and West Virginia had preceded it during the present legislative sessions.

Chairman Edwin Traynor stated that though the vote in committee was unanimous against the bill, the members did not give their reasons for their summary decision. Speaking for himself, he said that the bill represented an attempt to have the legislature declare the truth or fallacy of a certain theory. If it passed, the next session might see a request that the legislature express itself concerning the authenticity of the origin of the Bible, Mendel's law or the Einstein theory. The majority of the house met this explanation with a mild display of mirth, while the proponents of the bill preserved a stony silence.

Science News-Letter, March 5, 1927

One of the thickest jungles known is along the Motago River, in Guatemala.

ARCHÆOLOGY

Prehistoric Hair Bobbing

An American woman of about 1500 B.C. who wanted her hair bobbed had very little choice as to style. Hair cutting in those days had to be done with stone tools, and the result at best was a decidedly jagged effect, which, of course, may have been considered artistic in prehistoric America.

How the bobbed haired woman of 2500 years ago really looked is shown by mummies which have been remarkably preserved in the dry air of northern Arizona, according to Dr. Alfred V. Kidder, of the National Research Council. Dr. Kidder is a well known authority on the Basket Makers, as these earliest inhabitants of the southwest are called.

Women of the Basket Makers wore their hair cut short, while the men let their hair grow long, and arranged it in an elaborate system of partings, braids, and loops, Dr. Kidder said recently.

"Caves used as burial places reveal all that is known about the Basket Makers," he explained. "Like many other primitive peoples, they buried their dead with weapons, lavish offerings, baskets, and bead ornaments. The caves protected these burials, and the air of Arizona was so dry that conditions were unusually favorable for preserving both the articles and the bodies."

Graves of the Basket Makers have yielded the mummies of the oldest known American dogs, Dr. Kidder stated. A small lap dog was found buried with one of the prehistoric women, and a hunting dog was found by the side of one man.

"These dogs were not like the coyote or the wolf," he said. "The ancestor of the dog is not known, but probably the dog, coyote, and wolf all had the same common ancestor in earlier days."

Graves of the Basket Makers were plundered by Indians of somewhat later times, because when discovered by scientists some burials showed signs of having been disturbed and the bodies of Indians were looted of their bead jewelry. That this happened many centuries ago is shown by the fact that the plundered graves have since become covered by the gradual accumulation of soil.

Science News-Letter, March 5, 1927

Ultraviolet light is found to be of marked benefit in keeping monkeys, reptiles, and other zoo animals in good health and spirits.

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SCIENCE SERVICE
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There are about 7,000,000 dogs in the United States.

Flint mining was an important industry in prehistoric times.

Only a few of the dyes used in commerce ever occur in nature.

Rose water was exported from Persia as far as China by the ninth century.

Inexperienced drivers are less apt to get into accidents than old drivers, a traffic expert finds.

A wireless storm detector in New York enables the city to receive warning of a storm 50 miles away.

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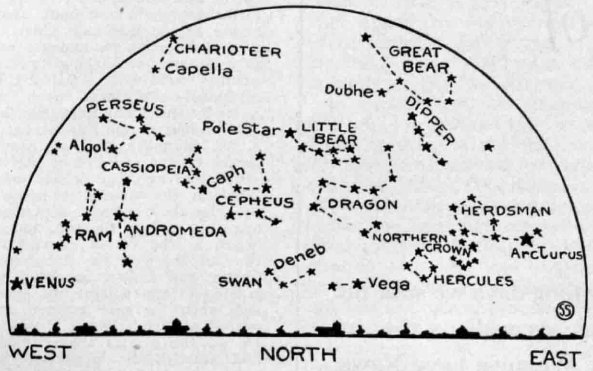
Spring Begins this Month When Sun Enters Aries



By James Stokley

Though the heavens have little to offer in March in the way of such spectacular occurrences as eclipses, there is one event which is always welcome, and happens on the 21st at 9:59 a. m., Eastern Standard Time. That is the Vernal Equinox, when the sun crosses the equator on its way north, and Spring commences, bringing along its assortment of back-lots baseball, hurdy-gurdies, and poems on Spring. But even though the winter has been fairly mild the season is always welcome, despite the poems and hurdy-gurdies.

Since the path of the sun, in which the planets also move, or the zodiac, is divided up into twelve equal "signs," another way of expressing what happens at the vernal equinox is to say that the sun enters the sign of Aries. Aries is a constellation which could be seen in the evening a few months ago. Now it is too near the sun to be easily visible, even though the sun is not in the constellation when it is in the sign. The Zodiac is not a recent invention, it was established thousands of years ago, when men thought that the part of the sky the sun was in had some mystic influence on people born at that time. Though such ideas have long since been given up by reputable scientists, some of the old terms are still used. In fact, the observations of the old astrologers, misguided though they were in their motive for studying the stars, really formed the foundation for the modern science of astronomy.

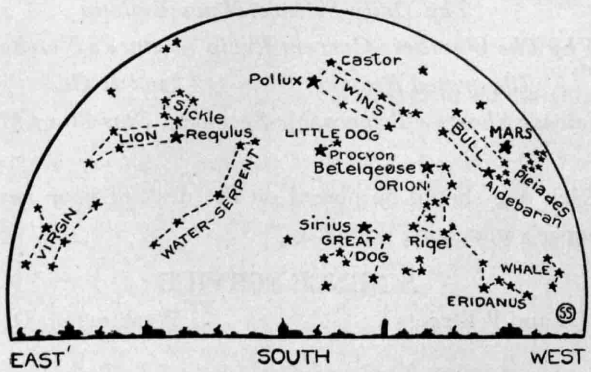
A few thousand years ago, the constellation of Aries coincided in the sky with the sign of Aries, but owing to what is called "precession of equinoxes," the skies have changed since then. On the 21st, the sun will not be in the constellation of Aries, but in the neighboring one of Pisces, the Fishes, and it will be some 23,000 years until the signs again fit the constellations.

This precession of equinoxes is a result of the fact that the earth is spinning. We usually think of the earth as being a sphere, but it is really not spherical. It is what mathematicians call an oblate spheroid, which means, in the case of the earth, that it bulges a little at the equator, just like some of the people on it. This is caused by the centrifugal force due to the earth's rotation. When you spin a weight around your head on the end of a string, it tries to fly away, but the string keeps it from doing so, unless you let go. In the same way, the part of the earth at the equator tries to fly away from the center, but the force of gravity keeps it from doing so. However, it does succeed in getting a little farther from the center than the surface at the north or south pole, with the result that the earth is not perfectly spherical. Another incidental effect of the earth's centrifugal force is that a person weighs less at the equator than he would at the North Pole, because this force tends to throw him away from the surface. Of course, no scales would show the difference, because the weights also would be lighter. But the diminution of gravity at the equatorial regions can be measured experimentally in another way, for the swing of a pendulum varies with the intensity of gravitation.

The heavenly bodies all exert more or less gravitational effect on each other, depending on their mass and distance. Because of its proximity to us, the moon has considerable effect on the earth, producing the tides, for example, and so does the sun. If the earth were a perfect sphere the gravitational effect of the moon would be the same regardless of its position. As it is, except at the fourteen day intervals when the moon is directly over the earth's equator, the moon's gravity acts more on the parts of the earth's bulge near it than the part on the opposite side. The result is that it tries to pull it into the same plane again, but as the earth is spinning, its momentum keeps it from responding to the pull. However, in combination with a similar effect of the sun, it does cause the earth to turn slowly, so that a line drawn directly up from the north Pole will trace out a circle in the sky. In 28,500 years, the circle would be completed. Another result of the "precession" is that what we call the pole star was not always such, nor will it always be so, though for the next few centuries it will be close enough for most of us.

Aries, then, a few thousand years ago, was the constellation in which the sun appeared at the beginning of Spring, and this was also, in many ancient countries, the beginning of the year. But if we go back about 6,000 years, Aries had not yet reached the position of the vernal equinox, and the constellation Gemini, the twins, visible these evenings in the southern skies, held this important post. It has been said that its stars represent a pair of twins and symbolizes the equal length of day and night at this time of year. Some similar symbolic meaning has been claimed for a mythological story about the twins. Castor and Pollux were their names, and they were the sons of Leda. They possessed what might be termed alternate immortality. As soon as one was killed, the other revived, and this, it has been held, symbolizes day and night.

(*Just turn the page*)



HOLD THIS PAGE IN FRONT OF YOU and face directly north or south. The upper or lower diagram will then show the sky as it appears on March evenings.

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Spring Begins

(*Continued from page* 147)

Probably the earliest record of any astronomical event is associated with Castor and Pollux, the two stars of the Twins, or alpha and beta Geminorum, as the astronomer calls them. On ancient Babylonian monuments and boundary stones, archaeologists have frequently found what is called the "Triad of Stars"—a crescent moon, with the horns upward, and two stars beside it.

According to an English astronomer, E. W. Maunder, the two stars represented Castor and Pollux. At the time, 6,000 years ago, the priests were interested in the first new moon of the year, for their calendar depended on the moon as well as the sun, and the year began at the vernal equinox. At this time of the year, in Babylonian days, Castor and Pollux could be seen low in the western twilight just after sunset, and when the new crescent moon appeared alongside them, it was the signal to the priests that the new year had started. So important was this phenomenon that they recorded it on their boundary stones and monuments to be preserved to this day.

Coming down to more modern times, the constellation Gemini is associated with another important astronomical event, the anniversary of which comes this month. The ancients knew only the naked eye planets, Mercury, Venus, Mars, Jupiter and Saturn. Sir William Herschel was the first to add to them, and on March 13, 1781, he discovered Uranus. In "The Watchers of the Sky," Alfred Noyes has Herschel say, referring first to the reflecting telescope with which he made the discovery:

". . . . . It was the work of my own hands,
A new one, with an eye six inches wide,
Better than even the best that Newton made.
Then, as I turned it on the Gemini,
And the deep stillness of those constant lights,
Castor and Pollux, lucid pilot-stars,
Began to calm the fever of my blood,
I saw, O, first of all mankind I saw
The disc of my new planet gliding there
Beyond our tumults, in that realm of space."

Uranus is now in the morning sky, but it is so faint that a telescope is always necessary to reveal it. Venus and Mars are both visible in the evening sky this month, however. The former is in the constellation of Taurus, in the southwest, not far from the first magnitude star Aldebaran, which it resembles, both in brightness and color. Mars, however, may be recognized, because it is to the north. Venus can be seen low in the western twilight, especially toward the end of the month, for then it will set about two hours after the sun. It is so bright, about six times as bright as Sirius, the brightest star, that it is easy to distinguish.

Science News-Letter, March 5, 1927

The Bureau of Chemistry reports that only five per cent. of the so-called radioactive medicinal preparations contain sufficient radium to be used as therapeutic agents.

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SOCIOLOGY

Man's Greatest Enemies

"The deadliest enemies of man at the present time are not disease, war and famine, but the industrial conditions of the cities." This is the conclusion of Dr. Warren S. Thompson of the Scripps Foundation for Research in Population Problems at Miami University, Oxford, Ohio, following a comparison of life and death records in town and country.

The natural increase of population is considerably greater in the country than in the city. A greater proportion of country women than city women marry, and the probability is that they marry earlier, so that they establish their families at an age when they are most likely to have children.

Farmers and miners, the two groups which are distinctly rural, have the highest average in size of families. Managerial and professional groups have the lowest average. Rural districts not only produce more children, but they have lower death rates than the cities, the studies show.

"It would seem clear beyond contradiction that from the standpoint of population growth, the rural communities stand at the top of all groups in the United States," Dr. Thompson states. "The incontrovertible conclusion is that rural conditions more nearly meet the vital needs of human life than urban conditions. If this is true now, how much more significant it is that sanitary and medical science have scarcely begun to minister to rural needs. It seems probable to me that the next generation will see even greater differences in the vital conditions of rural life, because the new immigrants who are contributing most, if not all, of the city increase are being shut out."

Science News-Letter, March 5, 1927

PSYCHOLOGY

Hypnotism Measured

How a psychological measuring stick has been applied to hypnotic experiences to show just how much the subject is affected by hypnotic conditions is told by Prof. Clark L. Hull, director of the psychological laboratory at the University of Wisconsin.

Hypnotized subjects were told that on awaking they would breathe twice as fast as usual while reading from the even numbered pages of a certain book, but only half as fast as usual while reading the odd numbered pages. The subjects were not hypnotized again, but they were asked from time to time to read from the same book, and the power of the suggestion was found to wane as time passed. Prof. Hull stated he has worked out a curve showing the degree to which breathing was affected after different intervals of time had elapsed.

In another test, the subjects were told while hypnotized that when they awoke they would perform two mental tasks simultaneously, one conscious and the other subconscious. The awakened subjects read from a book and at the same time worked complicated problems in mental addition as directed, but there was evidence that the two tasks alternated in their minds, and that one mental process interfered with the other. Each mental task, as a result, was less than half as efficiently performed as when the individuals had been told to do only one thing at a time. The subjects noticed the disturbance in their reading, but could not account for it as they were not conscious of working the problems in addition.

Prof. Hull reported that no evidence was found to show that the individuals tested were able to carry on a subconscious thinking process independently at the exact time at which they were consciously doing other mental work.

Science News-Letter, March 5, 1927

BOTANY

Pickle Industry Saved Again

The pickle industry is saved again. The past few years have been anxious ones for the cucumber, the chief component of the famous "57 varieties," on account of the presence of mosaic disease. This trouble belongs to the virus group of diseases, the cause of which is not yet known. It not only reduces the yield of the cucumber vines but induces the formation of blotchy, deformed young "cukes" instead of the shapely green type which the pickle maker demands. The prevalence of the disease has in some sections of the country noticeably discouraged the growing of cucumbers. O. H. Elmer, of the Iowa Agricultural Experiment Station, announces the discovery of a cucumber variety resistant to the mosaic disease. The new variety hails from China and is known as the "Chinese Long." Seeds obtained from Prof. R. H. Porter, of Nanking, China, were planted in Iowa where greenhouse and field tests were conducted and its disease resistant qualities established.

Science News-Letter, March 5, 1927

PSYCHOLOGY

Students Compare Crimes

Homicide is a worse crime than kidnapping. Setting fire to property is more serious than counterfeiting. Forgery is worse than assault and battery.

At least, these are the conclusion of 266 students at the University of Chicago, who were asked to state their opinions of the comparative seriousness of 19 offenses.

The experiment, which was made by Prof. L. L. Thurstone, psychologist at the University of Chicago, has just been reported to the *Journal of Abnormal and Social Psychology*. Each of the 19 crimes had to be compared with every other crime, so that the student rated perjury 18 times, comparing it with the other offenses, and so on down the list, making 171 opinions in all.

"It is of some interest," Prof. Thurstone states, "to note that all of the four sex offenses—rape, seduction, abortion, and adultery—were judged to be more serious than all of the property offenses. In the minds of the 266 college students none of the property offenses was considered to be as serious as any of the sex offenses."

Prof. Thurstone's experiment was conducted, not so much to find out what youth thinks about crimes, as to show that judgments of social problems, even though swayed by personal opinion and bias, may be measured and even reduced to a scale by mathematical procedure.

A scale of the seriousness of the 19 offenses has been worked out by Prof. Thurstone on the basis of the experiment. The most serious offense on the scale is rape, which slightly outranks homicide. Bootlegging comes third from the last item on the scale, followed only by receiving stolen goods and vagrancy.

Science News-Letter, March 5, 1927

MEDICINE

Surgical Headlights

Headlights on surgical scalpels, scissors and other instruments are a recent invention by Dr. H. Haebler, a German surgeon. They are designed especially for operations in the deeper body cavities, where the floodlight of the operation room is not always sufficient. The electric lamp is about the size of an ordinary bean, and receives its current through a pair of slender wires. The whole apparatus can be heat-sterilized as thoroughly as the metal instruments themselves.

Science News-Letter, March 5, 1927

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In order to aid in catching the items that concern you and to facilitate clipping and filing, a key word in small capitals has been printed on the right of the line above each article. The key words used fit into any system of classification, whether it be a straight alphabetical file, a system of your own devising, the Library of Congress classification or the Dewey system.

Note that you can clip out any article without fear of damaging another article in which you might be interested, since editorial matter printed on the righthand pages is backed by advertising, standing matter or a continuation of the article on the other side.

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GA Mathematical and astronomical geography.
GB Physical geography.
GC Oceanology and oceanography.
GF Anthropogeography.
GN Anthropology. Somatology. Ethnology. Ethnography. Prehistoric archæology.
GR Folklore.
GT Manners and customs.
GV Sports and amusements. Games.
HC Economic history and conditions. National production.
HE Transportation and communication.
HF Commerce.
HM Sociology. General.
L Education.
M Music.
N Fine Arts.
P Philology and linguistics.
Q Science. General.
QA Mathematics.
QB Astronomy.
QC Physics.
QD Chemistry.
QE Geology.
QH Natural history.
QK Botany.
QL Zoology.
QM Human anatomy.
QP Physiology.
QR Bacteriology.
R Medicine. General.
S Agriculture. General.
SB Field crops. Horticulture. Landscape gardening. Pests and plant diseases.
SD Forestry.
SF Animal culture. Veterinary medicine.
SH Fish culture and fisheries.
SK Hunting. Game protection.
T Technology. General.
TA Engineering—General.
TC Hydraulic engineering.
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TE Roads and pavements.
TF Railroads.
TG Bridges and roofs.
TH Building construction.
TJ Mechanical engineering.
TK Electrical engineering and industries.
TL Motor vehicles. Cycles. Aeronautics.
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TR Photography.
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TT Trade.
TX Domestic science.
U Military science. General.
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Dewey Classification

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020 Library economy
030 General cyclopedias
040 General collected essays
050 General periodicals
060 General societies
070 Newspapers
080 Special libraries. Polygraphy
090 Book rarities
100 PHILOSOPHY—
110 Metaphysics
120 Special metaphysical topics
130 Mind and body
140 Philosophical systems
150 Mental faculties. Psychology
160 Logic
170 Ethics
180 Ancient philosophers
190 Modern philosophers
200 RELIGION—
210 Natural theology
220 Bible
230 Doctrinal. Dogmatics. Theology
240 Devotional. Practical
250 Homiletic. Pastoral. Parochial
260 Church. Institutions. Work
270 Religious history
280 Christian churches and sects
290 Ethnic. Non-Christian
300 SOCIOLOGY—
310 Statistics
320 Political science
330 Political economy
340 Law
350 Administration
360 Associations. Institutions
370 Education
380 Commerce. Communication
390 Customs. Costumes. Folklore
400 PHILOLOGY—
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430 German
440 French
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460 Spanish
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480 Greek
490 Minor languages
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510 Mathematics
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540 Chemistry
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560 Paleontology
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670 Manufactures
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690 Building
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710 Landscape gardening
720 Architecture
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750 Painting
760 Engraving
770 Photography
780 Music
790 Amusements
800 LITERATURE—
810 American
820 English
830 German
840 French
850 Italian
860 Spanish
870 Latin
880 Greek
890 Minor languages
900 HISTORY—
910 Geography and travels
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BIOLOGY

NATURE RAMBLINGS

By FRANK THONE

581

The Useful Skunk

We are accustomed to treating the skunk as a somewhat shady joke; somehow everything that has to do with the sense of smell seems to be comic to most people; poor Cyrano was the only mortal to whom a nose was not funny. So we run when we see a "woods pussy," and indulge in persiflage about him afterwards.

But really, our humor about the skunk is somewhat misplaced. He is himself as serious as a Scotchman, and as thoroughly given to minding his own business and letting other folk mind theirs. Only when he is interfered with does he unlimber his one potent means of defense. That is something not to be used for a trifle, because chemical warfare, whether waged by man or beast, is expensive. It takes a lot of feeding to distil a sacful of mephitic extract. So if you let him alone you are in no danger from him.

And if you let him alone he will do you many a good turn without your ever knowing about it. For the skunk, like all the rest of his kin of the weasel tribe, is a tireless hunter of vermin. Rats and mice and such small deer are his principal food, but he does not despise succulent beetles and other good sized insects that prey upon our crops and timber. True, he sometimes forgets his manners so far as to rob a henroost, and frequently also he pounces on our friends the toad and the frog; but the evil that he does is more than outbalanced by the good.

Finally, skunks somehow lose their terror when they depart this life—in a hurry and much against their wills—to become furs for milady. Formerly this handsome black-and-white pelt had to be sold under various aliases, but now we have the courage of our desires (if we have the purchasing power to back it), and in coat or neckpiece we are willing to call a skunk a skunk.

PENOLOGY

Pay for Prisoners

Convicts in American prisons should be paid a living wage for their work, such as they could earn in the outside world; and their financial affairs should be so directed that they would leave prison with a better understanding of how to live on a working man's wages and how to apportion their money sensibly.

This solution of the nation wide problem of payment of prison labor is suggested by Dr. Charles S. Hyneman, of Indiana University, reported in the forthcoming issue of the *Journal of Criminal Law and Criminology.*

Dr. Hyneman advocates giving prisoners an incentive to work by paying each one according to the quality and quantity of the work he turns out. The state, he says, should deduct from the wage an arbitrary amount intended to very nearly equal the living costs of the average free laborer engaged in the same occupation as the prisoner. The prisoner should then be given a certain part of his earnings as spending money. And of the remainder of his wages, he should be compelled to contribute to the support of his dependents. If any money is left, it would be saved for the prisoner's own use after he has been released.

"This scheme will increase production in our prison workshops more than enough to offset the amount paid in wages," Dr. Hyneman says.

The laws in different states providing payment for prison work vary widely. Thirteen states pay no wage whatever. Some pay four or five cents a day. In a few cases it is possible for a convict occasionally to earn as much as $45 a month.

"By refusing to pay a money wage to the prisoner, society has made it impossible for him to accumulate a fund to support himself after his release from prison while he fits himself into the working and earning world," Dr. Hyneman says. "In so doing the state has not merely increased the obstacles in the way of the convict who is determined to go right, but has forced many of them to return to the paths which first landed them behind the bars."

He opposed the plan of paying a prisoner according to the number of his dependents or according to his willingness to work. If the prisoner

(*Just turn the page*)

ZOOLOGY

Texas Longhorn Protected

The Texas longhorn, whose wild head tosses through a thousand romances of the old Southwest, until now threatened with the extinction that nearly overtook the bison and the plains antelope, has joined these animals as a protected ward of the government on a special reservation in the Wichita National Forest in Oklahoma. Though not a native of this continent like its two companions and predecessors of the plains, it was introduced so early by the Spanish settlers and became so wild that it fits into the landscape of the Homeric days of our frontier as completely as they, and naturalists and historians have expressed themselves as much gratified by the action of Congress in adding this item to the agricultural appropriations bill, which has been signed by the President. Members of the U. S. Forest Service were especially active in promoting the measure, which was cared for at the Capitol by Senator Kendrick of Wyoming.

ZOOLOGY

Scorpions Born Alive

An observation bearing on the much-debated question of how young scorpions come into the world is presented in the weekly journal, *Science,* by Frank R. Smith of the department of entomology of the University of Arkansas. Statements of naturalists on this point have been in conflict, some declaring that this poisonous creeping creature lays eggs as do spiders and insects, others claiming that the young are born alive.

The common American species observed by Mr. Smith produces her brood fully developed, he says. Each was born in a very thin and transparent envelope from which it freed itself in about fifteen minutes' time. They were then assisted by the mother in getting on her back. There they moulted after from three to six days, and remained on their maternal carryall for from five to fifteen days before dismounting to shift for themselves.

Mr. Smith states that scorpions are easily kept in captivity if provided with water and food. They will eat small insects such as grasshoppers and roaches, but refuse caterpillars. They will also eat raw lean beef. Young scorpions feed readily upon termites, apparently in preference to anything else.

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Pay for Prisoners

(*Continued from page* 151)

is taught during his incarceration to expect as much as other prisoners, even though he is disabled in some way or is unable to do a standard amount of work, when he is freed he will be discontented if he finds himself unable to make as much as other stronger men in the industrial field.

"He must go out of the prison in a state of mind which will insure as much as possible his contentment with the working and wage conditions which he will meet in the outside world," this sociologist states. "The prison must be made to a large extent an industrial training school."

Science News-Letter, March 5, 1927

A glareless headlight has been perfected.

Detroit is to have an 80 story skyscraper.

Even walnuts are being trademarked now by a branding machine.

The female Hercules moth sometimes attains a wing spread of almost 12 inches.

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Do You Know That—

Blanket making is still a profitable business for Navajo Indians.

Purple is the favorite color of butterflies says a British zoologist.

Some people become immune to the poisonous effects of mosquito bites.

A giant clock in Jersey City has a minute hand weighing 2,200 pounds.

The most highly colored fruits grow in regions that get intense sunlight.

Only one-fourth of Siberia is suitable for farming; but this area covers 1,300,000 square miles.

Chinese tea is manufactnred by native methods which have not changed much in hundreds of years.

Artificial nitrate made from air now undersells the natural product from Chile in some markets.

Cane cream, a new syrup-like product of sugar cane, has been originated by government chemists.

The United States leads the world in smallpox cases, with the exception of certain regions of Asia.

About 5,000 words are added to our language every year, says Dr. F. H. Vizetelly, prominent lexicographer.

Examination of 225 pupils in New York schools showed that 154 wore faulty shoes, most of which were too short.

Grain elevators, feed mills, sugar refineries, and starch factories are particularly liable to dust explosions.

American copper mines will last only 40 years, judging by the deposits now known and the rate of present consumption.

At ordinary temperatures and pressures a molecule of gas will be bumped into several billion times a second by other molecules.

Siberian rivers sometimes freeze solid, and the imprisoned fish stay frozen until warm weather thaws them out and they can swim again.

When cutting flowers a part of the foliage should be left, as the plant gathers food through the leaves as well as through the roots.

First Glances at New Books

PURPOSIVE EVOLUTION: THE LINK BETWEEN SCIENCE AND RELIGION—Edmund Noble—*Holt.*

In the author of this book we have another of the small but growing number of students who are seeking to avoid the super-rarified atmosphere of subjectivism and mysticism on the one hand, and dure sensationism and materialism on the other, by accepting the U n i v e r s e whole - insidedly and whole-heartedly.

Everything is system-sourced and system-maintained; nothing is self-sourced and self-maintained. Such, roughly expressed, is the thesis of the book. "Material systems, whether inorganic or organic, are fashioned in the likeness of the cosmos." "The physico-chemical properties of matter are servants, not masters in the house life."

"Must not the universe be vastly richer than anything we can know about, and are we not, in our attempt to sum it up in concepts and propositions, simply dealing with surface inscription?"

Though neither professional philosopher nor professional scientist, Mr. Noble defends his thesis with much learning set forth in language that is nearly always clear and pleasant and sometimes really beautiful.

—WM. E. RITTER.

Science News-Letter, March 5, 1927

INTERPOLATION—J. F. Steffenson—*Williams & Wilkins* ($8). Invaluable to the mathematician, this book is also useful to the student of any science that uses mathematical symbols and tables, and what true science does not?

Science News-Letter, March 5, 1927

MATTER AND GRAVITY IN NEWTON'S PHYSICAL PHILOSOPHY—*A. J. Snow —Oxford* ($2.50). An adequate summary of Newton's ideas, especially appropriate at this time, in view of the approaching observance of the 200th anniversary of his death.

Science News-Letter, March 5, 1927

PROGRESS OF THE SCIENCE OF NUTRITION IN JAPAN—Tadasu Saiki —*Health Organization, League of Nations.* A collection of records of metabolism experiments at the Imperial State Institute for Nutrition at Tokyo. Interesting data showing the nutritional value that has been ascertained for various characteristic foods of the Orient.

Science News-Letter, March 5, 1927

Scientific Poetry Prizes

The first weekly scientific poetry prize has been awarded to Prof. E. H. Johnson, professor of physics, Kenyon College, Gambier, Ohio, whose poem, "The Quantum's Plight" is printed below. Although the announcement of the Science News-Letter's poetry contest has brought a hearty response, the winner of next week's prize has not yet been selected. Your hybridization of science and poetry is eagerly awaited by the editorial staff. The contest is open to all; do your poetry writing early.

Conditions: Poems, verses, rimes, jingles or what-have-you must be original and unpublished. They must express accurately some scientific fact or situation. Address: Poetry Editor, Science Service, 21st and B Sts., Washington, D. C. Keep a copy, as unavailable contributions can not be returned.

Prizes: One poem will be published each week. A prize of $5.00 will be paid for each poem published.

PHYSICS

The Quantum's Plight

This week's prize winning poem in the Science Service scientific poetry contest.

A lively little quantum went darting through the air,
Just as energetic quanta go speeding everywhere.
He had traveled far—this quantum—urged as if by some far call,
When he saw a lonely atom with no signs of pep at all,
And he started for that atom in the highest of elation.
Said he: "Here's where I show the world a trick of transmutation,
I'm going to hit that atom such an awful, awful whack,
That I'll knock out its electrons so far they can't get back."
So he gave that peaceful atom such an energetic shove,
That its outermost electrons soared to levels far above.
Then the atom got excited, and it held the quantum fast,
Until the last electron came tumbling back at last.
Then the quantum was released again, and fled in degredation,
While the atom got the credit for a lot of radiation.

—E. H. Johnson.

Science News-Letter, March 5, 1927

A single square foot of the sea bottom a mile down supports a weight of water greater than that of a couple of heavily loaded freight cars.

Tests show that some kinds of limestone used in building disintegrate if frozen less than 100 times, while other grades of limestone decay only slightly after 2,500 freezings.

ASTRONOMY

The Stellar Madhouse

Quotation from THE INTERNAL CONSTITUTION OF THE STARS. A. S. Eddington. Cambridge University Press.

The inside of a star is a hurly-burly of atoms, electrons and aether waves. We have to call to aid the most recent discoveries of atomic physics to follow the intricacies of the dance. We started to explore the inside of a star; we soon find ourselves exploring the inside of an atom. Try to picture the tumult! Dishevelled atoms tear along at 50 miles a second with only a few tatters left of their elaborate cloaks of electrons torn from them in the scrimmage. The lost electrons are speeding a hundred times faster to find new resting places. Look out! There is nearly a collision as an electron approaches an atomic nucleus; but putting on speed it sweeps round it in a sharp curve. A thousand narrow shaves happen to the electron in 10^{-10} of a second; sometimes there is a sideslip at the curve, but the electron still goes on with increased or decreased energy. Then comes a worse slip than usual; the electron is fairly caught and attached to the atom, and its career of freedom is at an end. But only for an instant. Barely has the atom arranged the new scalp on its girdle when a quantum of aether waves runs into it. With a great explosion the electron is off again for further adventures. Elsewhere two of the atoms are meeting full tilt and rebounding, with further disaster to their scanty remains of vesture.

As we match the scene we ask ourselves, Can this be the stately drama of stellar evolution? It is more like the jolly crockery smashing turn of a music-hall. The knockabout comedy of atomic physics is not very considerate towards our aesthetic ideals; but it is all a question of time-scale. The motions of the electrons are as harmonious as those of the stars, but in a different scale of space and time, and the music of the spheres is being played on a keyboard fifty octaves higher. To recover this elegance we must slow down the action, or alternately accelerate our own wits; just as the slow-motion film resolves the lusty blows of the prizefighter into movements of extreme grace—tnd insipidity:

Science News-Letter, March 5, 1927

A study of gifted children showed that 18 per cent. of the books read by the girls were boys' books, but only two per cent. of the boys' reading was in girls' books.

PHOTOGRAPHS OF SCIENTISTS

Science Service has a collection of nearly 2,000 photographs of scientists throughout the world. The fifth installment of this list is published below. Although this list has been checked with care, corrections are requested, since a complete catalog will be issued later. Photographs of scientists not listed are desired.

For the convenience of teachers and scientific enthusiasts, these photographs are offered for sale. Any ten photographs (each postcard size 3⅛ x5⅜ inches) will be sent postpaid for only $2.00. Enlargements, 8 x 10 inches, are $1.00 each postpaid. Postcard pictures are finished only in black and white, but enlargements are offered either in black and white or sepia on buff stock. Please specify which.

Starred (*) photographs can be furnished as $1.00 enlargements only. Photographs at these prices are sold with the understanding that they are not to be used for publication.

G (continued)

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458 Gerke, Roscoe, Chemistry, Mass. Inst. of Tech.
999 Gibbs, R. C., Physics, Cornell University
229 Gifford, E. W., Anthropology, Univ. of Calif.
325 Gilbert, C. H., Zoology, Stanford University
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571 Gilchrist, L., Physics, University of Toronto
10028* Gilman, E. D., Engineering, Univ. of Cincinnati
2 Gilman, G. A., Zoology, Woods Hole, Mass.
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1409 Giral, Jose, Oceanographic Spanish Inst., Madrid
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10050* Gley, Edouard, Neurology, College of France
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1256 Goldschmidt, Samuel, Univ. of Penna., Physiology
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1176 Goldwater, A. L., Medicine, New York City
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6070 Goodspeed, Arthur W., Physics, Univ. of Penna.
1370 Goodspeed, T. H., Bontany, Univ. of Calif.
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1205 Graves, Dean Henry S., Forestry, Yale Univ.
50 Gray, G. M., Curator M. B. L., Woods Hole, Mass.
907 Green, P. W. E., Physiology, London, England
783 Greenberg, David M., Biochem., Univ. of Calif.
669 Greene, Charles W., Physiology, Univ. of Mo.
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1198 Gregory, Herbert E., Geology, Yale University
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1119 Grollman, Arthur, Physiology, Johns Hopkins Med. Sch.
1172 Gross, Louis, Pathology, Mt. Sinai Hosp., N. Y. City
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523 Gunz, Helen M., Librarian, Amer. Mus. Nat. Hist.
79 Gustafson, F. G., Botany, University of Michigan
1124 Gabritchevsky, Eugene E., Biology, Columbia Univ.

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1456 Hadley, W. E., Chemist, Clark Thread Co.
10035* Haldane, J. B. S., Physiology, Cambridge Univ. England
6049 Hale, George Ellery, Mt. Wilson Obs., Pasadena, Calif.
437 Haley, George, Zoology, St. Ignatius Univ., San Francisco
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10037* Hall, Charles M., Chemistry
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228 Hall, H. M., Botany, University of California
241 Hall, I. C., Bacteriology, Univ. of California
871 Hall, R. P., Zoology, Rice Institute
910 Hallsworth, H. M., Economics, Armstrong College, England
10034* Hamilton, Alice, Industrial Med., Harvard
668 Hamilton, W. F., Physiology, Louisville Univ.
499 Hamlin, C. J., Pres. of A. A. of M., Buffalo, N. Y.
697 Hammett, Frederic S., Biochemistrty, Wistar Inst.
1167 Hance, Robert T., Biology, Rockefeller Inst., N. Y.
10033* Hancock, Harris, Mathematics, Univ. of Cincinnati
10132* Hand, Irving F., Meteorology, U. S. Weather Bur.
384 Handman, Max S., Sociologist, Univ. of Texas
231 Hanna, G. Dallas, Paleontologist, Calif. Acad. Sci.
1365 Hansen, N. E., Horticulture, S. D. State College
1133 Hanstrom, Bertil, Com. Zoology, Univ. of Lund, Sweden
678 Hanzlik, Paul J., Pharmacology, Cleveland, Ohio
853 Hardesty, Irving, Anatomy, Tulane University
512 Hardisty, Wm. L., Pathology, Med. Sch. of St. Louis University
1046 Hardy, W. B., Sec'y Royal Soc., England
459 Hargitt, Chas. W., Zoology, Syracuse University
460 Hargitt, George T., Zoology, Syracuse University
869 Harnley, Morris H., Zoology, Columbia University
1092 Harper, Henry W., Chemistry, Univ. of Texas
28 Harper, R. A., Botany, Columbia University
457 Harris, Lewis, Chemistry, Mass. Inst. of Tech.
633 Harrison, Louise, Anatomy, Med. Sch. of Wash. Univ.
26 Harrison, Ross G., Zoology, Yale University
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6022 Hartness, James, Mech. Engineering, Astronomy, Springfield, Vt.
597 Harvey, B. C. H., Anatomy, University of Chicago
68 Harvey, E. N., Physiology, Princeton University
10039* Harvey, William
943 Harwood, Miss Margaret, Astronomy, Maria Mitchell Observ., Nantucket
776 Haskell, M. W., Mathematics, Univ. of Calif.
1273 Hausman, Leon Augustus, Zoology, Rutger's College
478 Haweis, Stephen, Artist, New Rochelle, N. Y.
1038 Hawkins, James A., Chem.-Biophysics, Rockefeller Institute
1184 Hay, Clarence L., Archaeology, Amer. Mus. of Natl. Hist.
98 Hayden, Margaret, Zoology, Wellesley College
1008 Haywood, Charlotte, Physiology, Mount Holyoke College
74 Hazen, Tracy E., Botany, Columbia University
1107 Heaps, C. W., Physics, Rice Institute
583 Heath, E. S., Botany, Northwestern University
326 Heath, Harold, Zoology, Stanford University
108 Hecht, Selig, Physiology, Harvard University
1440 Hedrick, U. P., Botany, N. Y. Agr. Exper. Station
421 Hegner, R. W., Protozoology, John Hopkins Univ.
1328 Heilborn, Otto, Cytology, Stockholms Hogskola, Stockholm, Sweden

(To be continued)

SCIENCE SERVICE

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Anniversaries of Science

March 10, 1876.—The first telephone message.

Mr. Thomas A. Watson, Bell's assistant, relates that it was on March 10, 1876, over a line extending between two rooms in a building at No. 5 Exeter Place, Boston, that the first complete sentence was ever spoken and heard through the electrical telephone. It was spoken by Bell and heard by Watson, who recorded it in his notebook at the time. It consisted of these words: "Mr. Watson, come here; I want you." Thus the telephone was born . . . .

On January 25, 1915, the transcontinental line, spanning Bell's adopted country from ocean to ocean, was, in the presence of dignitaries of State and Nation dedicated to the public service. This was a day of triumph for Bell, for, using a reproduction of the original instrument, he once again spoke the memorable words, "Mr. Watson, come here; I want you." But this time Bell was at New York, and Watson, who heard him with perfect ease, was 3,000 miles away, in San Francisco.

—John J. Carty: *Ideals of the Telephone Service*, an address before the Telephone Pioneers of America, 1922.

March 13, 1781.—The planet Uranus was discovered by William Herschel.

That marvellous night
When—ah, how difficult it will be to guide,
With all these wonders whirling through my brain!—
After a Pump-room concert I came home
Hot-foot, out of the fluttering sea of fans,
Coquelicot-ribboned belles and periwigged beaux,
To my Newtonian telescope.
The design
Was his; but more than half the joy my own,
Because it was the work of my own hand,
A new one, with an eye six inches wide,
Better than even the best that Newton made.
Then, as I turned it on the Gemini,
And the deep stillness of those constant lights,
Castor and Pollux, lucid pilot-stars,
Began to calm the fever of my blood,
I saw, O, first of all mankind I saw
The disk of my new planet gliding there
Beyond our tumults, in that realm of peace.

—Alfred Noyes: *Watchers of the Sky.*

March 15, 1079.—The Seljuk era began in Persia. It was the period during which Omar Khayyam's reformed calendar was used.

Ah, but my Computations, People say,
Reduced the Year to better reckoning?—Nay,
'Twas only striking from the Calendar
Unborn To-morrow, and dead Yesterday.

—Omar Khayyam: *Rubaiyat, LVII.*

Science News-Letter, March 5, 1927

Practically all silver and black fox furs used in the United States are from fox farms.

The dog star, Sirius, was called the Nile Star by the Egyptians.

PSYCHOLOGY

Twelve Day Noise Test

The roar of traffic outside an office window, telephone bells jangling, the whir of mimeographs and other office machinery—how do such noises affect a good typist's speed, accuracy, and her energy output?

An answer to this question is being sought in the psychological laboratory of Colgate University, where a noise test has been started under the direction of Dr. Donald A. Laird. The experiment began on February 21, to be continued each week day for two weeks.

The subject of the experiment, Miss Elsie Keller, is a typist capable of 158 words a minute. She sits at a typewriter in a special test chamber with walls of solid brick and types the same letter over and over, while the experiment staff makes its scientific records and observes her through a small window in the room.

The noise for the experiment is produced by a noise-making machine.

"This machine, operated electrically," said Dr. Laird, "produces a steady hum like the din of traffic, rings an electric telephone bell automatically at irregular intervals, and actuates an automobile horn from time to time. Sometimes the whir of office machinery is duplicated by the machine, and rises above the sound of the din of traffic. Conversation is reproduced occasionally by a recitation on a phonopraph. These noises are kept up every minute of the experiment, not five feet from the typist.

"During the six-day stretch in the middle of the experiment, the noise is to be echoed and re-echoed by the walls of the room just as it is built up by reverberations in the ordinary office building. On these days, the test chamber is no noisier than most offices and quieter than many offices. During the first three and last three days of the experiment, the reverberations of sound will be cut down to half."

Throughout the two weeks, Miss Keller gets a standard amount of sleep each night. She eats a standardized breakfast, and does no walking except to enter a taxicab and later to walk from the cab to the test chamber. She is then weighed in, like a prize fighter, and sits before the typewriter quietly resting for half an hour to bring her metabolism down to a low or standard level.

While she is typing, she wears a mask fitted over her nose and mouth, so that exhaled air can be collected and analyzed to show how many calories of energy she is burning up.

After the first stretch of typing, Miss Keller reported that the only noise which disturbed her mentally was the sound of an automobile siren which blew from time to time.

Science News-Letter, March 5, 1927

ASTRONOMY

Largest Southern Telescope

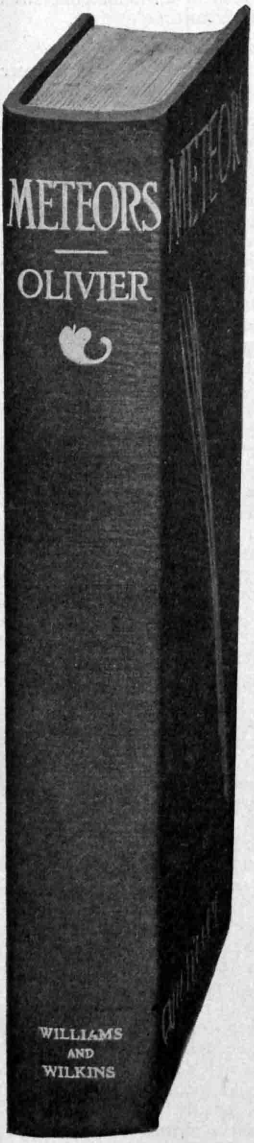
The largest telescope in the southern hemisphere, an instrument exceeded in size by only two others in the world, will be in operation at the new South African station of the Harvard College Observatory within the next two years, it was announced recently by Dr. Harlow Shapley, director of the observatory. The contract for this giant research instrument has just been awarded to a firm in Pittsburgh, Pa., that has made many large telescopes, including the 72-inch reflector at the Dominion Observatory, Victoria, B. C., the world's second largest.

The new Harvard telescope will be a reflector also, in which a concave mirror 60 inches in diameter replaces the convex lens of the more familiar, or refracting, type. The mirror faces the star, and as it is concave, or dish-shaped, the light rays converge after being reflected from it. They are reflected to the side of the instrument by a second, flat mirror, in one type, and are brought to a focus on a photograph plate, or in an eyepiece, if the telescope is being used visually.

So far, the exact site of the new station has not been decided, but it will be somewhere in the Union of South Africa, and the capital of Orange Free State, Bloemfontein, is being given serious consideration. Since 1890 the Harvard Observatory has operated a branch station at Arequipa, Peru, for the purpose of studying stars and other celestial objects that never rise above the horizons of northern countries. However, as cloudy weather handicapped the observation from Peru for a large part of each year, the high plateaus of South Africa were found to be better for continued work the year round. The instruments from the Peruvian station are now being prepared for moving by Dr. John Paraskevopoulos, who has been in charge for the last four years. These include a photographic telescope with a double lens, 24 inches in diameter, one of the largest of its kind, another with a triple lens ten inches in diameter, and three other photographic telescopes. New mountings are being provided for the first two instruments.

Science News-Letter, March 5, 1927

Two of the Thirty-Seven "Most Notable Books"



In SCIENCE NEWS-LETTER for February 12th an article appeared setting forth the 37 selections of the American Library Association of the most notable books published in America in 1925; the selection was made for the institute of International Intellectual Cooperation of the League of Nations. Among the ten titles selected under the category of Natural Science were Lotka's **Elements of Physical Biology** and Olivier's **Meteors.**

Elements of Physical Biology

By ALFRED J. LOTKA

Dr. Raymond Pearl calls it "an original book in the highest sense of the word." It approaches the problem of evolution from the point of view of both mathematical physicist and philosopher. "Never before has this approach been made with anything like so competent a mentality as Dr. Lotka's," Dr. Pearl adds.

R. D. Carmichael characterizes the book as "a new chapter of science"; William A. White calls it "exceedingly stimulating and informing"; and Daniel B. Leary finds in it a "mine of information, observation, measurement statistics, fact and conclusion. . . . as fascinating a book of science as I have read in a long long time."

Physicist, biologist, mathematician, the student of general science—all should possess this unique work; and as SCIENCE NEWS-LETTER has already said, "the philosophical conclusions on life in general will appeal to many readers whose biological back ground is—merely background."

6 x 9—xxx+460 pages. 72 Illustrations.
4 Synoptical Charts. Analytical Table of Contents

Price, $6.00

Meteors

By CHARLES P. OLIVIER

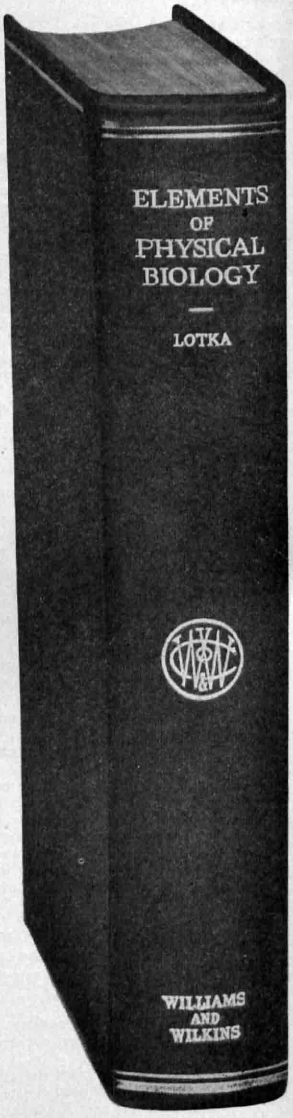
The first general treatment of meteoric astronomy since 1871, the work is a comprehensive one, written by the leading authority, on this branch of astronomy, in the United States. According to Popular Astronomy it "deserves a place in every astronomical library as well as in all general libraries."

John A. Miller says: "The book is written for the intelligent layman and for the professional astronomer. The story is succinctly yet completely told in an inviting and charming manner. The arrangement permits one who desires to do so to read the non-technical parts of the book and omit, without a sense of incompleteness, the well-told chapters that contain the mathematical treatment."

Certainly no student of astronomy should be without the book. But it is a book for the general reader also, with its fascinating story of these visitants from outer space, its simple directions for making observations, its handsome format and illustrations.

6¼ x 9¾—xix+276 pages. Bound in blue cloth with gold cover design, gold top. 32 half-tones.

Price, $6.00



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