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EDITED BY WATSON DAVIS

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EDWIN E. SLOSSON, Director
WATSON DAVIS, Managing Editor

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TWO NEW COMETS DISCOVERED

Two comets discovered by American astronomers in three days is the record just established.

The discovery of a new comet on Saturday, November 14, was made by Leslie C. Peltier, an amateur astronomer of Delphos, Ohio, according to a report to Dr. Harlow Shapley, director of the Harvard CollegeObservatory which acts as a clearing house for astronomical information. The other comet was discovered Tuesday morning, November 17, by Prof. George Van Biesbroeck, of the Yerkes Observatory, which has since been observed by Dr. Hamilton M. Jeffers, of the Lick Observatory in California, and Prof. Asaph Hall, at the Naval Observatory in Washington.

When picked up by Mr. Peltier, who is a member of the American Association of Variable Star Observers, the comet was in the constellation of Hercules, now low in the northwestern sky shortly after sunset, thus making the comet quite difficult to observe. It is described as of the eighth magnitude, so that if it were better placed in the sky, it would be visible through small telescopes or even field glasses.

POISON GASES IN COMETS' TAILS

Two deadly poisons, cyanogen, tried during the war as apoison gas, and carbon monoxide, the "coal gas" given off by defective stoves, are found in the tails of Peltier's and Van Biesbroeck's comets, according to Dr. Edwin B. Frost, director of the Yerkes Observatory of the University of Chicago.

These heavenly visitors have been spectroscopically analyzed by N. Bobrovnikoff, of the observatory staff. By photographing them through a telescope with a large glass prism attached over the lens, he has been able to study the spectrum and has found the bright bands which correspond to glowing cyanogen and carbon monoxide, which are frequently found in comets' tails. There is also a continuous spectrum which is due to reflected sunlight, and which, according to Dr. Frost, is stronger in the case of Van Biesbroeck's comet than in the other.

Since November 17, the morning that it was discovered, Van Biesbroeck's

comet has been steadily observed, chiefly by the discoverer himself, but its brief visit to the solar system is rapidly drawing to a close. Computations of its exact path show that it was nearest to the sun at the end of September , and as it is now moving away, it is becoming much fainter than when discovered and will hardly become visible to the unaided eye.

Peltier's comet, which was discovered independently by a Polish astonomer named Wilk, was picked up in the constellation of Hercules, low in the northwestern sky, by Yerkes astronomerson Saturday evening November 21, and is rapidly moving to the southeast, at about 4 degrees a day. On the same evening, it was seen by Dr. R. A. Rossiter of the Detroit Observatory at the University of Michigan, and by Prof. Asaph Hall, of the Naval Observatory at Washington, and on Sunday evening, November 22, by Dr. Hamilton M. Jeffers, of the Lick Observatory of the University of California. According to dispatches from Europe, it was also discovered independently by Drs. P. Guthnick and R. Prager, of the University of Berlin, on November 18, According to the usual practice of naming comets after all astronomers who make the discovery before other reports have been circulated, it will probably be known officially as the Peltier-Guthnick-Prager-Wilk comet, a name nearly as long as its slendor tail.

BIRD'S EYE LIKE SHORT-FOCUS CAMERA

Denying the plausibility of the long-accepted notion that bright feathers of male birds serve to attract their mates, Dr. Austin H. Clark , of the U. S. National Museum has announced that the structure of birds' eyes and direct observation of their relation to their environment indicate that both the bright colors of the male and the modest hues of the female hide the wearers from their sharp-eyed enemies.

The idea that our most conspicuous birds are hidden by their brilliant coats appears paradoxical, but Dr. Clark points out that the conspicuousness depends on who does the looking. The secret lies in the construction of the bird's eye. It differs chiefly from our own and other mammals' eyes, he says, in being built about a lens of shorter focus. The image projected by the lens of a bird's eye therefore lies all in one plane or nearly so, resulting in the equal definition of all the objects in the field of vision. This is necessary for an insectivorous bird catching its prey upon the wing or for a predaceous bird. Distance means little to them, detection of their victims everything.

To a predaceous or an insectivorous bird, therefore, a landscape consists of a clear-cut patchwork of myriads of fragments of all sorts of colors and of sizes. Each stick and stone and leaf stands out sharply, no matter how distant. Against such a background, Dr. Clark explains, those objects must be least conspicuous which are most boldly colored in sharpest contrasts, dark and light, regardless of what the colors are.

In the relatively long-focus mammalian eye, sharp vision is possible in only one plane, which is continually shifting back and forth. Beyond this plane the landscape becomes blurred, and tends to be reduced to the average color of all its various elements, so that the creature least conspicuous to a mammal is the one most nearly like the average color.

The dull coated female bird which stays near the nest is therefore protected by her color from attack by mammals, Dr. Clark maintains, while the brightly colored male living in the tree tops and perching on the ends of branches is

protected by the gaudier hues from attack from other birds with their wonderfully perfect eyes.

JELLYFISH FERTILIZE PASTURES OF THE SEA

Jellyfish, the glittering, pulsating gelatinous capsules found in estuaries at the seaside, play an important part in the nourishment of the life in the ocean upon which the commercial fishes feed, according to Dr. A. G. Huntsman, professor of marine biology at the University of Toronto, and director of Atlantic research of the Biological Board of Canada. The soft, often colorless animals, delicately spread when in the sea, but shapeless when taken out of the water, die in myriads when they strike areas where the temperature is not favorable. When they go to pieces, valuable stores of foodstuffs are released, Dr. Huntsman explained.

Locked up in the bodies of the living jellyfish are reserves of inorganic material, probably nitrogen, and whenever this is turned loose in the water by the death of the animal, it is utilized by the swarming microscopic plants in the sea. The plants themselves are eaten by the water fleas, minute shrimp which serve as the prey of small herring, the fish which are popularly called sardines. The herring in turn are devoured by the cod and other valuable commercial fish, and thus the nitrogen stores in the jellyfish eventually help to build up the flesh of the food fishes.

The discovery is thought to explain in part the fertility of the historic Grand Bank fishing ground, which is located over the great continental shelf off the coast of Newfoundland. Here millions of the Arctic types of jellyfishes are brought down with the Labrador current, and finding conditions too warm for them, they perish. Similarly, tropical varieties are carried into the Grand Bank areas by the upward swinging Gulf Stream, and these too are killed, when they encounter expanses of cold water.

The investigation, which required the cooperation of scientists in many different fields, has assigned to the jellyfish an important function in the regulation of the plants and animals of the sea. Heavy crops of the minute plants and water fleas have been recorded, following a profusion of the dying jellyfish.

NO "LOST CONTINENT" IN PACIFIC OCEAN

"Lemuria", "Mu", and all the other hypothetical vast land areas forming "lost" Pacific continents, like the lost Arlantis of ancient European imagination, receive no credence on the part of Dr. Francis Xavier Schaffer, noted geologist of Vienna, now traveling inthe Pacific area and the Orient. Dr. Schaffer is backed up in his opinions also by the scientists at the Bernice P. Bishop Museum of Honolulu.

Though no land areas of continental size ever existed in the Pacific, Dr. Schaffer stated, there are regions of movable zones where emergence and submergence are constantly in progress.

"Such a line," he said,"goes all around the Pacific and connects the

Antarctic continent with the continents of the southern hemisphere. It is easy, too, to see that the northern continents may more than once have been connected by way of the Bering strait and by the rising of the relatively shallow sea bottom between Greenland and Europe."

Dr. Herbert E. Grgory, director of the Bishop Museum, disagrees with the theory advanced by Dr. J. Macmillan Brown, chancellor of the University of New Zealand, who claims that the Pacific islands are the remnants of a once great empire that collapsed into the ocean in a series of cataclysms.

"Geological evidence," said Dr. Gregory, "gives no proof that there ever was a large area of land in the central Pacific. No rock has been found which could be considered part of an old continent. The only way that geologists will ever be able to make a real test of these theories will be by an extensive system of borings which must extend through the coral and the comparatively new levels of the islands, and also by a carefully planned sounding of the Pacific Ocean."

"The lost continent theory cannot be substantiated by botanical discoveries," said Dr. Forest B. H. Brown, botanist of the Bishop Museum. "In the Hawaiian Islands, for instance, over 80 per cent. of the plants with net-veined leaves occur nowhere else in the world. Had Hawaii been a part of a continent of which the other Pacific islands were also parts, one would expect more plants in common to all."

LONDON'S OLDEST INHABITANT WAS LEFT-HANDED LOWBROW

A left-handed lady at least 20,000 years old is attracting more attention in London than any young debutante. Part of the broken skull of this prehistoric inhabitante was found in the heart of the city in the course of deep excavations for an office building. Prof. G. Elliot Smith, who has examined it carefully, has expressed the opinion that the woman belonged to the late stone age, and she is therefore the oldest Londoner and the second oldest British resident so far discovered.

One of the most interesting characteristics of the stone age Londoner is her left-handedness, which is indicated by the greater development of the right side of the brain. Six per cent. of the population today is left-handed and anthropologists think it likely that a similar condition extended back into the past indefinitely. Probably the prehistoric woman had the same difficulties in managing stone age tools and household equipment that modern left-handers have with right-hand telephones, door knobs and coat buttons.

The evidence indicates that the skull is very old. A fine Roman pavement had been discovered in the same locality a few feet below the ground surface. But the skull lay in blue clay under 40 feet of earth, far below relics of Roman occupation. The leg bone of a wooly rhinoceros was found at the same depth. And both above and below the skull level were bones ofa mammoth.

The skull's antiquity is further shown by its fossilized condition, and the edges of the fractures indicate that it was broken in ancient times, possibly before it was deposited in the fossil beds of the pleistocene gravel. There seems little doubt that the skull, like the animal bones, was carried to the site by floods coming from somewhat farther up the Thames.

The intelligence of the prehistoric woman is in dispute. A cast of the brain cavity, made by Prof. Smith, shows that she was quite flat headed, and wile there is no likelihood that the woman lived so far back as the Neanderthal period, experts who have examined her brain are not agreed as to whether it belongs to the earlier Neanderthal model popular some 50,000 years ago, or to the later higher browed type known as Homo sapiens.

GIVING LUNG SURGICAL REST CURE COMBATS TUBERCULOSIS

A surgical method of giving unfortunate tubercular lungs the rest cure will be described by Prof. John Alexander of the University of Michigan in the December issue of the Journal of the Outdoor Life as the means of curing or improving a large percentage of patients suffering from progressive tuberculosis in one lung.

The "rib operation", as this method is called, is the most important surgical means of treating tuberculosis. It was first used in a crude form by a French surgeon of Lausanne, Switzerland, and was greatly improved later in Germany. It has passed the experimental stage and has been used by European surgeons with a remarkable degree of success.

It consists in removing from one to eight inches of the eleven upper ribs where these are joined to the spine. The pleural cavity is not opened and the lung is not touched. The gaps left by the removal of portions of the ribs are filled when the remaining ends come together, and the size of the chest is reduced on the operated side, compressing the lung and its cavities.

Within a few months the cut ends of the ribs grow together and bony bridges form between them. The lung loses its power to function, and has achance to eliminate in time the diseased portions. Experience has shown that one healthy lung is enough for the normal respiratory needs of any person.

After the tuberculosis is healed the lung cannot be restored. This is not a disadvantage, because the weak lung is held under permanent control against the dangers to which it would be exposed when the patient returns to active life.

After the wound is healed the deformity is very slight. Although the lung is greatly diminished in size the circumference of the chest does not appear much smaller because the collar bone holds the shoulder at its normal distance from the body. The range of motion and the strength of the shoulder and arm on the operated side are very little impaired.

An illuminated Liberty Bell as high as a six story building and containing 20,000 electric lamps is to be built in Philadelphia to commemmorate the 150th anniversary of American Independence.

West Virginia is the only state in the Union which has motor cars to carry safety directors and devices to mines in answer to emergency calls.

CELEBRATE 25th ANNIVERSARY OF YELLOW FEVER CONQUEST

Twenty-five years ago two "buck privates" and a few medical officers of the U.S. Army under Major Walter Reed at a camp in Cuba offered up their lives and were experimented upon in order that yellow fever might be conquered.

"Among the truly great scientists who have blessed the race by putting into man's hand the means of protection from the most deadly disease belongs Walter Reed," said Dr. Victor C. Vaughan, chirman of the Division of Medical Sciences of the National Research Council, in commenting on the anniversary. "His name is placed along with those of Jenner and Pasteur by the work he did in determining the cause of yellow fever."

Dr. Vaughan is now the sole surviving member of the "Typhoid Commission" on which Major Reed served at the close of the Spanish-American War, and which was established to fight the epidemics that raged among American troops.

"Yellow fever is now practically wiped out, except for small areas back of Bahia, in Brazil," said Dr. Vaughan, "and perhaps for spots in Africa where a mild disease somewhat similar to yellow fever still occurs, and which some authorities believe is where the disease dirst originated. A commissionfrom the International Health Board of the Rockefeller Foundation went to western Africa in July for the purpose of studying this disease and determining whether it is truly yellow fever.

"Another school of medical thought claims that yellow fever existed in America before Columbus arrived, and that Columbus had the disease himself when he landed the second time. From there it is believed to have been spread to other portions of the earth in the old wooden ships which afforded an ideal hiding place for the mosquitoes that harbored the disease-giving organisms."

At the close of the Spanish-American War in 1898, Cuba became a ward of the United States, and in thefollowing year the dreaded yellow fever broke out among the American troops stationed there. A commission composed of Major Walter Reed, Dr. James Carrol,Dr. J. W. Lazear and Aristides Agramonte were appointed to look into its cause and transmission.

Like many great discoveries, this one was not made all at once or by one man. Dr. Carlos H. Finley, twenty years before, had advanced the idea that the disease was transmitted by mosquitoes. Major Reed determined to test out this theory, and the only way to do this was to use human beings to try it out on, as animals appeared to be immune. Volunteers were called for and the commission offered themselves too. Every man knew he was likely to die.

Two young soldiers, Privates John R. Kissinger and John J. Moran, offered their services. Dr. Reed talked with them and told them the danger and suffering involved and said that a money compensation would be made them if the experiment was successful. The soldiers declined the reward, and Major Reed touched his cap and said, "Gentlemen, I salute you". He wrote later in his published account of the experiment: "In my opinion this exhibition of moral courage has never been surpassed in the annals of the Army of the United States."

The volunteers permitted themselves to be bitten by mosquitoes that had stung yellow fever patients. Dr. Lazear became ill with fever and died in convulsions. Dr. Carroll almost died, and for three days his life hung in the balance. The experiment was tried on eleven other men and nine of them came down

with yellow fever.

There ware some who did not think this was definite proof. A lonely hut was constructed, far away from habitations and divided into two parts by wire screens.

The entire building was also covered with screens. Two susceptible men were put into this house, one in each compartment, and were thus subjected to the same conditions. Both lived there a while and remained perfectly healthy, showing there was no infection.

Then Major Reed let fifteen infected mosquitos fly into one of the compartments. The man in the mosquito infested compartment was bitten fifteen times. In four days this man had yellow fever and the other one separated from him only by a screen remained perfectly well.

The mosquitos were removed and soldiers were placed in each compartment. They remained well. There were still sceptics who claimed that infection might yet be by contact. Major Reed devised conditions which absolutely disproved this theory and showed that only by direct injection of blood from a yellow fever patient, or by an infected mosquito bite, which he said was the same thing, could the disease be transmitted.

Once the cause was known, it was possible to stamp out the disease. The effect of this event on history and world progress has been revolutionary. The Panama Canal became a possibility and shorter trade routes were open to all the ships of the world. Plague ridden ports of Latin America were cleaned up and large areas were made habitable.

Some archeologists see in yellow fever the cause of the downfall of prehistoric American civilizations. There are those who see a new era of progress for Latin America now that the plague of yellow fever has been removed.

BLOOD CELLS TELL WHEN OPERATION NEEDED

Blood cells which flash signals of danger or safety, as important as those of railway semaphores, form the basis of a medical discovery made in Spokane,Wash. by Miss Vicla Brewer, technician in the laboratory of the Deaconess' Hospital. The young woman's research has given doctors a new method of sizing up mastoid infection and determining the need for operation.

Miss Brewer has succeeded in taming the eosinophiles, those white corpuscles in the blood which become reddish on contact with the stain employed in making blood counts. Her discovery came about in connection with her laboratory work, in which blood counts were a part of the daily routine. The results of daily tests in mastoid infections centered her attention on the circumstance that subsiding infection is always indicated by a change in the character of the patient's blood test.

Through careful study and comparison, Miss Brewer demonstrated that severe infection causes disappearance of the eosinophile corpuscles in the blood of the patient. With improved conditions these corpuscles reappear in normal

abundance. Frequent tests in individual cases showed that there was uniformity in the disappearance and reappearance of the eosinophiles. Close study showed that the changes were in exact harmony with the bedside record of clinical symptoms, including pain, swelling and temperature. In temperatures ranging from 98 to 100 the percentage of eosinophiles was at its maximum. By pursuing the comparisons the technician became convinced that the corpuscles could be made valuable aids to physicians on watch.

When research had established consistent activity of eosinophile action and clinical symptoms, Miss Brewer submitted a detailed report to her laboratory chief. This report has been accepted for scientific publication. Ear specialists in Spokane are employing the method in regular practice. They state that it is a valuable guide to treatment, and that the signals are important in determining the need for use of the knife.

MAKES STEEL DIRECT FROM ORE

A new way of making steel and workable iron direct from the crude ore, developed recently by Henning Flodin of Stockholm, Sweden, may influence the industry and shift some of the world's iron and steel manufacturing centers. The process uses electrical power, but it will be economical only where water power for generating electricity may be cheaply obtained.

Mr. Clodin described his process to steel manufacturers and scientists at a conference held in Birmingham, England, recently. He claims it has been thoroughly tested out both in the laboratory and on a large scale in the plants of the Hagfors Ironworks, in Sweden, where he has made 114 test batches of iron and steel..

He used Swedish hematite ore, English coal and Swedish charcoal in furnaces taking from 250 to 300 kilowatts of electrical power. The process is continuous and feeding only needs to be interrupted when a batch is poured. The phosphorus and sulphur content of the product is almost negligible and carbon is as low as two hundredths of one per cent. The process is particularly well adapted to the making of high grade tool steels.

YALE UNIVERSITY'S HOME TOWN HAS PRIVATE INSECT PEST

Monopoly of an undesirable oriental immigrant is the undesired distinction now held by New Haven, a distinction which the city is determined to get rid of at the first opportunity. The immigrant is a little beetle from the orient, an insect related to the Japanese bettle that has wrought havoc among the truck farms of New Jersey and Pennsylvania, and also to the common native American May-beetle. It is, however, considerably smaller than the Japanese beetle and very much smaller than the May-bettle, so that its adult form is not easily detected by the casual searcher.

Several years ago residents of New Haven notices distressing bare patches in their lawns where the grass was being killed by an unknown enemy. Dr. W. E. Britton, state entomologist of Connecticut, investigated the condition and found

that the roots were being eaten by the larvae or grubs; for the new enemy spends its early life underground just as the May-beetle does. The adults, Dr. Britton states, feed very little or not at all, living apparently on stored-up reserves accumulated during grubhood. But the voracious appetites of the grubs make up for the abstemious habits of the adult beetles, and ever-widening patches of dead grass have annoyed the householders of New Haven.

So far as is known, the pest is confined entirely to one area in the residence section of New Haven, and almost entirely to the lawns. One strawberry patch has been ruined, but that is all the damage reported to gardens. If the insect were to spread its range, it might become another major pest; but fortunately it has shown little dispostion to wander. This may possibly be due to the fact that although it has wings it appears to do little flying.

During the past summer its depredations have become serious enough to arouse a campaign against it, and heroic measures will be taken this winter to wipe out the colony.

SWEDISH WATERFALL RUNS DANISH TRAINS

A Swedish water fall now runs the trolleys in Copenhagen, the capital of Denmark thanks to the completion this fall of the most powerful electric cable ever laid under water. Replacing a smaller cable that has been in use since 1914, it is capable of transmitting 50,000 volts and thereby adds "White coal" on a large scale to the list of Swedish articles of export . Besides the Copenhagen trolleys the electricity transmitted under water also runs factory machinery and gives light to the city and the surrounding countryside.

Crossing the Sound, or strait that separates Sweden and Denmark, at its narrowest point, the new cable leaves Sweden at Helsingborg and enters Denmark at Elsinore within sight of the "Hamlet" castle, called "Kronborg". In length it is about three and a half miles and it weighs over 200 tons. It was made in six sections and the "sleeve" covered joints, completed as the cable was being laid, are of a new type. To hold the cable ship steady six anchors were used. The cost of the new cable is about $500,000, defrayed jointly by the Swedish power company and Danish municipalities. The power comes from the river Lagan in southwestern Sweden.

BAY OF BISCAY UPHEAVAL WAS A HOAX

The stir caused some two months ago by the alleged discovery by a French Government vessel that the floor of the Bay of Biscay had undergone a sudden upheaval and that, in place of the abyss marked on the marine charts there was now a comparatively shallow plateau, seems to have been a hoax.

A special survey ship of the French Government, the "Gaston-Rivier" was sent out to check the soundings reported, and Dr. Charcot's scientific ship, the "Pourquoi-Pas?" collaborated in the work. After the most thorough investigation, it was found that the bottom of the Bay of Biscay had not changed in any way since the charts in general use were made.

Mystery surrounds the original reports, and it is currently reported that the officer who made them is to be placed under arrest.

TABLOID BOOK REVIEW

THE MEDICAL FOLLIES. By Morris Fishbein, M.D., editor Journal of the American Medical Association. Boni and Liveright. $2.00.

The public exhibits its most intense credulity when it tries to remedy its bodily ills. Fortunes have been made and lives have been lost through the unscrupulous fleecing of the Babbitry of the nation by quacks and charlatans. Men who would hesitate to invest in an unknown stock gladly offer up their physical well being to untried and untested methods of treatment. Dr. Fishbein, one of the chief officers of the A.M.A.'s organization for the benefit of the physician and the protection of the public, in this book explains the methods that the plausible practioners of unethical medicine use upon their victims.

HIGH LIGHTS OF GEOGRAPHY: NORTH AMERICA; 358 pp.
HIGH LIGHTS OF GEOGRAPHY: EUROPE; 321 pp.
By David Starr Jordan and Katherine Dunlap Cather; The World Book Company, Yonkers-on-Hudson, N.Y., 1925. $1.44 each.

The name of Dr. Jordan as the senior author of these two books is in itself a guarantee of their excellence, and the anticipations from seeing his name on the cover are fully justified when one looks inside. His wealth of experience from his travels in the places described, his extensive scientific knowledge and his ability to impart his knowledge in an interesting way ably qualify him for the task. The use of modern illustrations, frequently from airplane photographs, and the frequent references to the legends and history surrounding the places described, make these books unique among geographical texts. To one who has had his elementary geography taught him from the dry "So and so is bounded on the north by something, on the east by something else, etc." type of geography, it makes him wish that he could start to study it over again!

Common salt is used in the recovery of silver from its ores.

Rock fights were the principal pastime, equivalent to our baseball games or movies, enjoyed by inhabitants of Perugia, Italy , during the Middle Ages.

Stage scenery is now made in which two scenes are combined in one composite drawing, one scene of which is visible under red light and the other under blue light.

A railroad has just been opened through the famous Khyber Pass, between India and Afghanistan, the most historic mountain passway in the world.
