PHYSICS

Gravity Tests on Animals To Anticipate Space Travel

EXPERIMENTS on animals in large and small gravitational fields were suggested as preparation for travel through space to the moon and planets other than our own in a lecture given here before the Amateur Astronomers' Association by Dr. John Q. Stewart, associate professor of astronomical physics at Princeton University.

"Passengers in a space cruiser, unless special provisions were made, would be subjected at different times to a variety of gravitational fields," he said. "At a height of, say, 13,000 miles, after the ship had attained a sufficient velocity to coast up the rest of the long hill toward the moon, nothing in the ship would weigh anything if the engines were turned off. On the moon people would weigh one-sixth of normal.

"Experiments with animals or even men could be made in a big rotating cage, since the centripetal acceleration would simulate gravity. Indeed it has been suggested that a big rotating cylinder inside a space ship might provide an artificial gravitational field, so that the crew could work under the normal condition.

"Experiments with guinea pigs in a region free from gravitation could be carried on by dropping a box full of them, with suitable recording instruments, down an excavated tube about as high as the Empire State Building. The box would be caught softly on springs at the bottom. The duration of the fall, however, would be less than ten seconds, and the large deceleration at the bottom might confuse the record."

Science News Letter, November 15, 1930

PALEONTOLOGY

Dinosaur Family History Yields New Clue

A HIGHLY important clue to life in the world 200,000,000 years ago, during the Triassic Period, has been yielded by fifteen tons of earth from the banks of the Little Colorado River, east of the Grand Canyon in Arizona. Barnum Brown of the American Museum of Natural History and L. I. Price of Oklahoma University sifted this material through fly screens to recover the remains of the probable reptile ancestor of the dinosaurs and the phytosaurs.

The siftings from the fossil earth were hauled ten miles to a spring before the fragments could be washed and looked over. This process required three weeks of patient work and rewarded the investigators with only enough fragments to cover the bottom of a cigar box a half inch deep. But these fragments were enough to enable the scientists to restore the rare little beast that lived before the dinosaur and is believed to be ancestor to it and to another ancient reptile, the alligator-like phytosaur. The small ancestral reptile is about three feet in length.

Science News Letter, November 15, 1930

PALEONTOLOGY

Census of Birds Caught In Tar Pit Completed

THE LaBREA asphalt pits near Los Angeles, which served as a vast animal trap for many centuries during the Ice Age, captured many birds in addition to their larger and more spectacular catches of saber-tooth tigers and other terrifying mammals now happily extinct. Dr. Hildegarde Howard of the Los Angeles Museum has recently completed a census of the birds from the famous pits. She finds that there are over 4,100 individual birds represented in these collections, 69 per cent of which are predatory species. Of these, the kinds that hunt by day are far in excess of the nocturnal types, the diurnal birds numbering 2,500, the owls but 400.

Of all species of birds, the golden eagle, which still exists, is most abundant, being represented by at least 880 individuals. Next in abundance is the extinct turkey, Parapavo, with 500 individuals. Other extinct species whose numbers total over 100 are: Teratornis, the great vulture-like bird, exceeding in size any bird of flight known today; a smaller vulture closely related to the modern black vulture; and a still smaller vulture type, related to the Old World group. The caracara, now limited in distribution to more southerly regions, is represented in the Rancho La Brea collections by 250 individuals.

Several other species, still known in California, occur in large numbers in the asphalt deposit: the California condor 190, the bald eagle 150, the red-tailed hawk 113, the burrowing owl 116, the great horned owl 104, and the quail 101.

Other types occur less abundantly. All of the ducks and geese together total less than 100, the shorebirds less than 60.

Science News Letter, November 15, 1930

IN SCIENC

RADIO

Says Radio Commission Blocks Good Rural Service

"ONLY the Federal Radio Commission now blocks the way to better radio on the farms and in the small towns of the nation." This is the charge made by O. H. Caldwell, a former member of the commission and now editor of *Electronics*, a magazine devoted to the vacuum tube and allied topics. He makes the statement in an editorial to appear in the forthcoming November issue of the journal.

"High power stations on every clear channel, is the only answer to the demand for satisfactory broadcast reception on the farms and in small towns remote from city centers," he states.

Continuing, he says, "The radio art, after costly research, is ready to supply broadcasting service of high technical quality to every home. The channels are cleared ready for it. Twenty-seven responsible broadcasters are willing to invest several hundred thousand dollars each, to bring city quality to additional rural millions in their sections."

Science News Letter, November 15, 1930

ORNITHOLOGY

Scientist Reports Attacks Of Owls on Human Prey

NUMEROUS cases of owls swooping down upon human prey are reported by Dr. Albert M. Reese of West Virginia University in *Science*.

Most of the victims were reported as being struck with the claws or beak of the bird and some suffered painful injuries. Dusk appears to be the favorite stalking time of the owls, though one encounter is recorded at the dawn hour and one on a moonlight night. In a number of cases the victims observed the birds had nests or young nearby.

Hunting grounds of the owls are not limited to a few lonely or isolated areas, evidence from points as widely separated as Texas or Oregon and Ontario, Canada, have convinced Dr. Reese. Policemen on their night beats in towns have even complained of the feathered attackers.

Science News Letter, November 15, 1930

E FIELDS

CHEMISTRY

Swedish Chemists Seek Pulp Wood By-Products

SWEDISH chemists are at present engaged in research for the recovery of by-products from the manufacture of wood pulp.

According to a recent anouncement, two Swedish chemists attached to the Swedish College of Pharmacology have obtained a patent on a method for the extraction of phytosterin from sulphate soap (pine oil). It is claimed that this substance will prove a substitute for lanoline and rape oil as the base of salves and marine oil.

It is further stated that at least 18,000 tons of pine oil can now be recovered from the manufacture of sulphate pulp in Sweden, whereas the actual production is only about 5,000 tons. If sulphate soap corresponding to a quantity of 18,000 tons of pine oil is treated for production of phytosterin it would yield about 450 tons of this product, which, if used for marine oil, would yield no less than 90,000 tons of oil. Although the practical utility of the method has not yet been tested on a large scale the inventors think that it will prove a valuable means to reduce the cost of the pulp making and thus make the operations far more profitable.

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PSYCHOLOGY

Baby's Activity Multiplies During First 10 Days

THE ACTIVITY of the very young infant increases enormously during the first ten days of his life. And, contrary to the impression popularly entertained by the neighbors, the period of greatest activity is not between midnight and 2 A. M., but just before the 6 o'clock morning feeding.

These are among many other intimate details of the lives of the younger generation disclosed by a study made at the psychological laboratories of the Ohio State University at Columbus under the direction of Prof. Orvis C. Irwin.

As soon after birth as possible, the infant was placed under observation. A code had been arranged so the experimenter could record with a combination of numbers and figures the character of every move the child made from the pursing of his lips to the wiggling of his tiny toes.

But much to the surprise of the scientists, when the baby got hungry he moved so vigorously and quickly that the recorder's pencil was left far behind.

Five infants were studied. The average number of movements per minute on the first day was 11; on the tenth day it was 43. During the periods of all-over activity, the movements speeded up to 66 per minute for the first day and 418 per minute on the 10th day.

As the child grew older there were more movements of single parts of the body, and proportionately less of the all-over activity. This change in the character of the movements, Professor Irwin believes is due to the maturing of the infant's brain.

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GEOLOGY

Greased Mountains Once Part of Oregon Landscape

"LUBRICATED mountains" which have moved considerable distances and formed a landslide topography of unsurpassed grandeur and magnitude have been found in the John Day river area of interior Oregon by Dr. Edwin T. Hodge, University of Oregon geologist.

In the vicinity of Maupin butte, overlooking the John Day chasm, "great masses measured in square miles" have moved toward the river, producing landslide pockets and lakes, Dr. Hodge reports.

The university geologist explains that the topography is due to the fact that the Columbia river lavas, hundreds of feet thick in places, poured over the John Day river clays, a formation which is easily unconsolidated and softened by ground water. The clays form a lubricant on steep slopes over which the heavy, greatly jointed Columbia basalt slides.

Although the "greased" basalt found in the John Day basin of central Oregon moved from its original position before the coming of white man, Dr. Hodge sees no reason why similar slides should not occur in the present age, providing the underlying clays receive sufficient ground water.

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CHEMISTRY

European Chemists To Lecture at Cornell

EIGHT famous European chemists have accepted non-resident lectureships at Cornell University for the next four years, it has just been announced. The lectureships were established by George F. Baker, of New York, and the holders speak on topics in their own field of investigation.

Prof. Georg von Hevesy, of the University of Freiburg, Germany, one of the co-discoverers of the element hafnium, is here now. Next spring he will be succeeded by Dr. N. V. Sidgwick, of Lincoln College, Oxford. The holder of the lectureship next fall will be Prof. W. L. Bragg, of the University of Manchester, England, who was awarded the Nobel Prize in 1915 jointly with his father, Sir William Bragg, for their work on analyzing crystal structure by X-rays. Next will be Prof. Alfred Stock, of the Technical High School, Karlsruhe, Germany, then Prof. Cecil H. Desch, Sheffield, England; Prof. Otto Hahn, Kaiser-Wilhelm Institute for Chemistry, Berlin; Prof. V. M. Goldschmidt, Göttingen; and Prof. Robert Robinson, of London University.

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AERONAUTICS

Gas Cells Increase Safety Of New Sky Warrior

See Front Cover

THE first gas cell of the new U. S. Navy airship, Akron, which will be the largest and safest lighter-than-air craft in the world, was being tested when the photographer took the picture on the front cover at the Akron airship dock, Akron, Ohio, where the ship is being built by the Goodyear-Zeppelin Corp.

The cells are an important factor in the safety of the new craft. Twelve compartments will contain the individual cells which range in size from 80,000 to nearly a million cubic feet. They make up the airship's total gas capacity of 6,500,000 cubic feet. The huge size of the ship is emphasized in the picture by comparing it with the 80,000 cubic foot blimp alongside.

The Akron, formerly designated as the ZRS-4, will be primarily a fighting craft. She will have a built-in hangar for five airplanes and will carry 16 50-caliber rapid-fire machine guns. Her cruising radius at 60 miles an hour will be more than 10,000 miles.

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