

## PHYSICS

**First Photograph of Liquid Helium Made by Canadians**

**T**HE FIRST photograph of liquid helium to be taken was shown to members of the Royal Society of Canada by co-workers of Prof. J. C. McLennan of the University of Toronto, who secured it during experiments at temperatures near the absolute zero.

The pictures were taken at just two degrees Centigrade above absolute zero and showed that the surface of this extremely cold liquid helium has a peculiar nature. Prof. McLennan and his associates, H. D. Smith and J. O. Wilhelm, discovered hitherto unnoticed changes in the appearance of the liquid helium as it passed from one modification to another at its triple point, the temperature at which solid, liquid and gas can exist side by side.

The depths of the temperature scale, corresponding to below minus 450 degrees on the familiar Fahrenheit scale, were explored in these experiments at the University of Toronto in order to test the Raman effect on liquid helium. This is the discovery for which the Hindu scientist, Prof. C. V. Raman, received the 1930 Nobel prize. He found that intense light of a single color is partly changed to other colors when it passes through various transparent substances.

Prof. McLennan found that the Raman effect for liquid helium corresponded to the theoretical value. The experiments were performed in the same laboratory in which helium, the non-inflammable elemental gas, was first liquefied in America.

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## GENETICS

**Experiments Produce Two New Hybrid Animals**

**R**EPORTS of two new types of hybrid animals, representing successful crosses between quite diverse parent stocks, have been reported to *Nature*. The first is a cross between eland and domestic cattle, reported by Dr. Ernest Warren, of the Natal Museum in South Africa. The eland is a big antelope, reaching a maximum weight of about a ton; it has long, straight horns with twisted ridges on them. Cattle and antelopes both belong to the order of hoofed mammals, but have never been considered close relatives. There have

been reports of crosses between them in the past, but up until the present full authentication has been lacking. In Dr. Warren's hybrid the characteristics of the domestic cattle predominate.

The second strange hybrid is reported from Moscow, where M. M. Zavadovsky has succeeded in crossing the Indian humped cattle, or zebu, with the long-haired Tibetan yak. The zebu is closely related to domestic cattle, but the yak, though a relative also, is rated as a separate genus by zoologists. Mr. Zavadovsky has also crossed with a zebu bull the zebu-yak hybrid cow that resulted from the first experiment; and in further breedings has crossed zebu-yak hybrids with a hornless yak male.

The first-generation of zebu-yak hybrids are colored like the yak parent, but do not have the long "fringe" of hair that is characteristic of the yak. Their horns are different from those of either parent, and the muzzle is intermediate but nearer the zebu.

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## INVENTION

**Weighing Machines "Go Talkie" in Europe**

**W**EIGHING machines at the corner drug store or delicatessen may soon be announcing your weight in the mellifluous tones of a master-of-ceremonies, instead of merely pointing a finger at a figure, or handing you a printed slip with the latest news from the avoirdupois front, a "fortune" and the picture of your favorite movie queen.

Such machines have already been invented in Europe, R. W. Smith, chief of the section on weights and measures of the U. S. Bureau of Standards, told the network audience of the Columbia Broadcasting System in a talk arranged under the auspices of Science Service.

Mr. Smith visioned a possible extension of the "talkie" weighing machine idea to include the detection of slugs and counterfeit coins dropped in by over-thrifty but under-honest persons. After telling how various machines now test every coin dropped into them in as many as ten different ways, he suggested that instead of simply rejecting the false coin as most of them do, a "talkie" weigher might courteously thank a patron for an honest penny but reprove him in loud and raucous tones if he tried to palm off a dishonest one.

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**IN SCIENCE**

## GEOGRAPHY

**Mile Sounding Increases Depth of Deepest Lake**

**N**EW DEPTH records have been set by Lake Baikal, in Siberia. Long famous as the deepest lake in the world, the greatest depths that had hitherto been found were recorded as 4,642 feet; these are now surpassed by a sounding of 5,306 feet, a little over a mile, made by a recent hydrological expedition. Considerable areas of this great freshwater inland sea were found to be over 4,800 feet deep.

The expedition also found a sunken mountain range running across the lake from east to west. If it were only a little higher, Baikal would be two lakes instead of one, for the water over its top is not more than six or eight hundred feet deep.

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## GENETICS

**Double Jointed Thumb May Show Paternity**

**C**AN YOU bend your thumb backward as well as forward at the second joint?

If so, you have probably regarded it as useful only as a parlor trick to amuse nephews or other young people. It may, however, serve a serious useful purpose. The study of the inheritance of this odd ability adds another item to the known list of hereditary human traits following the Mendelian law. It can also serve to determine questions of paternity, Leon F. Whitney, geneticist of New Haven, Conn., told a meeting of the Eugenics Research Association.

It is not known how many persons have this ability, but it is much smaller than the number whose thumbs can bend in only one direction, he said. He found in studying the families of those who have the ability, that it is not always handed down by parents who have it to all their children, but that it may skip a generation and follows the pattern of a typical Mendelian recessive trait.

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# E FIELDS

## PSYCHOLOGY

## Psychiatrist Explains Nudistic Movement

**T**HE UNDERLYING cause of the nudistic movement which has gained many followers in Europe and America was explained by Dr. Sandor Lorand of New York City in an address before a joint meeting of the American Psychiatric Association and the American Psychoanalytic Association.

Adherents to this cult have founded colonies in which clothes are entirely dispensed with and the sexes mingle freely. They believe this will lead to better physical and mental health.

Dr. Lorand based his explanation of the movement on cases in which he has given psychoanalytic treatment. The nudistic movement, he said, may be looked upon as a compensation to many persons for having to repress certain tendencies which society will not tolerate. Since the movement itself is partially tolerated by society, it helps to keep the participants from developing neurotic symptoms. It is just one external manifestation of the general changes being attempted in the whole structure of social life and morals and which center around the problem of sexuality.

"The outcome of the much emphasized aim of the nudistic movement, health and enlightened sex education, especially for the young, may be very dubious," declared Dr. Lorand. "But unmistakably, nudism serves as a means of gratification and compensation for the one who practices it."

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## ASTRONOMY

## New Evidence Against Mythical Planet Vulcan

**A** NEW NAIL has been driven into the coffin of the mythical planet Vulcan by Dr. H. von Klüber, of the Astrophysical Observatory at Potsdam. Vulcan was once supposed to revolve around the sun in an orbit within that of Mercury. Such a body would never be seen in the night sky, but would be visible either when it passes in front

of the sun, or during a total eclipse, when the bright solar disc is temporarily hidden by the moon, and faint objects in the same part of the sky are made visible.

In May, 1929, Prof. Erwin Freundlich, director of the Einstein Tower at Potsdam, photographed the eclipse of the sun visible in Sumatra. Though made for other purposes, his plates showed such a profusion of star images that Dr. von Klüber decided to examine them carefully to make sure that Vulcan was not concealed there. For purposes of comparison photographs of the same part of the sky, but without the sun, were made six months later, with the same telescope, set up at Potsdam. If a planet were present, it would betray itself by its motion between the time of the two exposures.

The search proved conclusively that there is no planet as bright as the ninth magnitude, considerably below naked eye visibility, up to a distance of 40 minutes from the sun. This is approximately equal to one and a third solar diameters. Closer than this the bright solar corona, visible at eclipse time, might have made faint objects invisible, but even there, Dr. von Klüber believes, a planet as bright as the seventh magnitude, also too faint to be seen with the naked eye, would have been found.

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## ENTOMOLOGY

## Butterflies, "Winged Jewels", Are Gems at Start of Life

See Front Cover

**B**UTTERFLIES have been called "winged jewels" so often that the conceit can hardly be considered poetic any longer. Yet the appropriateness of the old metaphor receives new confirmation when we look at the egg of a butterfly, which represents the humblest beginning of its career of beauty. For this tiny nursery, whence the young caterpillar, unwinged and unlovely, will presently creep, is itself exquisitely jewel-like in its proportions and symmetry and in its delicate sculpturing.

Seen in magnification, without any of our common grosser objects to present a dwarfing size-scale, as Cornelia Clarke's camera has pictured it for the cover of this issue of the SCIENCE NEWS LETTER, the egg of a common Monarch butterfly on its milkweed leaf looks like the dome of an Eastern palace rising above a fantastic forest in Fairyland.

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## PSYCHIATRY

## Criminals Prefer Jail To Insane Asylums

**T**HE AVERAGE criminal prefers to go to jail for a definite sentence rather than to be committed to an institution for the treatment of mental disease, Dr. William Nelson, director of the psychiatric child guidance clinic of St. Louis, told the American Psychiatric Association.

"Contrary to popular opinion," said Dr. Nelson, "offenders do not invoke 'insanity' as an 'excuse' for their crime. An investigation conducted over a five-year period reveals the fact that over 70 per cent. of individuals committing misdeeds prefer to go to a penal institution for a specific period rather than to be committed to a mental disease institution indefinitely, where they know they are likely to remain until in the judgment of the psychiatrist they are able to again meet community social demands."

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## ZOOLOGY

## Toads Poisonous When Bitten, Not When Biting

**S**HAKESPEARE'S characterization of the toad as "ugly and venomous" may have a good deal more accurate zoology in it than it has been given credit for. Not that toads have a deadly bite like serpents, but that they are sometimes seriously poisonous when bitten, or even when handled.

Evidence along this line is brought forward in a new Smithsonian Institution monograph. In it there is one account of a Mexican toad whose poison was fatal to a terrier that pounced on the batrachian and shook it to death, and had a paralyzing effect on a large police dog that merely touched it with his nose. The terrier's master, M. E. Musgrave of the U. S. Biological Survey, was made dizzy and ill, though he had not touched the toad, while he was examining his dying terrier.

Toad venom, states Dr. Remington Kellogg of the Institution staff, is secreted by two different types of glands, and seems to be divided into two corresponding classes. That from the belly glands is a narcotic alkaloid, acting on the nerves. The secretion from glands on the back and shoulders is acid and acts as a convulsive.

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