

and failed but Haber had every reason to hope for success.

So he put out to sea in a ship specifically fitted as a chemical factory. He got samples from the oceans of the world. The results were all disheartening. The seas contained only a thousandth of the gold that previous analyses had indicated. Inaccurate analytical methods and use of gold-containing chemicals in making the earlier analyses had led Haber on a wild gold chase. Haber found the average gold value of sea water to be only 24 hundred thousandths of a grain per gross ton.

Disappointed he wrote: "It is not probable that the precipitation of gold from sea water will ever be a commercial success."

*Science News Letter, April 7, 1934*

PSYCHOLOGY

## Same Chord Produces Calm and Excitement

THE MUSICAL chord known to musically trained persons as the "chord of excitement" and more technically as the "diminished seventh chord," need not always produce a feeling of excitement in the listener, Dr. Christian Paul Heinlein, of the Florida State College for Women told the Southern Society for Philosophy and Psychology.

The chord is fitted admirably for exciting passages and this use is illustrated clearly in the music of Liszt, Wagner, and Tchaikowsky, but the chord is extremely versatile, Dr. Heinlein said. He presented musical passages in which the chord is conducive of calm and repose.

*Science News Letter, April 7, 1934*

ASTRONOMY-METEOROLOGY

# Weather Cycles on Planets Revealed by Brightness Study

## Colossal Examination of Records Since 1840 Shows Up Variations That German Astronomer Believes Atmospheric

OTHER planets in the solar system have their cycles of weather. Such is the conclusion arrived at by Dr. Wilhelm Becker of the Astrophysical Observatory at Potsdam from a long study of planetary light.

He collected all the observations that have been made on the brightness of the planets Mars, Jupiter, Saturn, and Neptune, from 1840 down to the present time, eliminated the effects of their varying distances from us and from the sun, reduced all the observations to a common scale and standard position of the planet—a colossal piece of work. When this was done, he found that there were still variations in brightness that could not be accounted for by any external cause, but must be due to changes that take place on the planet itself.

These changes, Dr. Becker believes, are atmospheric. They are comparable to the weather cycles that have been observed on the earth, such as the well-established Brückner cycle of 35 years. This cycle cannot be connected with sunspots because its period would then be 11 or some multiple of 11 years.

Dr. Becker's reasons for arriving at this conclusion are:

Some of the planetary variations in brightness found by him recur at equal intervals of time—are regularly periodic. Others, though irregular in period, have always the same character at each recurrence. The maxima and minima of brightness occur at different times on the different planets, and therefore can not be due to a single external cause such as a variation in the intensity or quality of the sun's radiation, which would affect all at the same time. Finally and most important, he finds that the brightness variations are correlated with certain changes in the appearance of the planet that can be and have been observed with the telescope.

Dr. Becker gives the following picture of the observational results in the scientific journal *Forschungen und Fortschritte* and in his report to the Prussian Academy of Sciences:

The brightness variations of Mars are characterized by long-lasting minima and short sharp maxima, the variation in the intensity of the light coming to us being about 35 per cent. There is no regular period.

Saturn, on the other hand, shows variations that are the mirror image of those of Mars. They have long-lasting



A PLANET CHANGES EXPRESSION

The differences between these two photographs of Mars which were taken about a month apart indicate how the appearance of the planet changes. The polar caps change conspicuously, being largest in Martian winter and smallest in summer. The general surface of the planet is reddish with sharply bounded areas of gray or dull green. It has an atmosphere, though not a dense one. The pictures were taken at the Mount Wilson Observatory of the Carnegie Institution of Washington with the 60-in. telescope.

maxima and short sharp minima—like-wise with no regular period. The variation in intensity is about 40 per cent., after the light from the rings has been eliminated.

Jupiter, Uranus, and Neptune, on the contrary, show a regular periodicity in their light variations; that is, after a certain interval of time, the period, they always return to the same brightness. The length of the period is with Jupiter 11.6, with Uranus 8.4, with Neptune 21 years. The variation in brightness is for each about 25 per cent.

Jupiter and Saturn show easily discernible changes in appearance that run parallel with the light variations. In the telescope Jupiter appears to be crossed by a number of parallel cloud belts, the central one of which follows the equator. During a brightness-maximum the equatorial and northern belts are reddish brown, the southern belts white. During a minimum the colors are reversed, the equatorial and northern belts being (*Turn to Page 222*)

## PHARMACOLOGY

## Drug Given in Childbirth May Poison Baby

**S**UCH DRUGS as veronal and amyral when given to relieve the pain of childbirth may pass from the mother to the baby and poison the latter. Evidence of this was presented by James M. Dille, of Georgetown University School of Medicine, at the meeting of the American Physiological Society in New York City.

Obstetricians observing the condition of babies whose mothers had been given these drugs have reported conflicting views. Some found the babies were normal, others found the babies showed they had been poisoned by the drug.

The question appears to have been settled by the investigations Mr. Dille made on animals. Using a very exact method of determining the presence of these drugs, Mr. Dille was able to detect relatively large amounts of amyral or veronal or barbital in the unborn offspring of guinea pigs, rabbits and cats which had received doses of the pain-relieving drugs or sleeping powders. In some of the offspring he found almost enough of the drug to produce anesthesia.

"The conclusion to be drawn from these results," Mr. Dille said, "is that these drugs must be used with greater care and caution in the practice of obstetrics."

*Science News Letter, April 7, 1934*

## MEDICINE

# Research Finds Four Glands Concerned With Diabetes

## Disease is Not Just a Matter of Sugar and Insulin; It is Influenced by Thyroid, Adrenals and Pituitary

**D**IABETES, a death-warrant disease until the discovery of insulin about a decade ago, is not merely a matter of the proper functioning within our bodies of the pancreas in which insulin is manufactured.

Other glands of internal secretion, the thyroid, the adrenals and the pituitary, play their parts in causing and preventing that disease of surplus sweetness. Dr. B. O. Barnes of the University of Chicago told at the meeting of the American Physiological Society in New York how these glands are interrelated.

For many years diabetes has been considered primarily a disease of the pancreas with its insulin-producing islands of Langerhans. During the last few years evidence has been accumulating that some of the other glands of internal secretion might also be involved, Dr. Barnes explained. For instance, experimentally-produced diabetes may be markedly improved by removal of the pituitary gland. This small structure located deep within the head has an important influence over growth and sex.

The thyroid also plays a part in diabetes. If a diabetic patient develops Graves' disease, due to overactivity of the thyroid gland, the diabetes becomes worse. Latest experiments now show that this effect is the result of the thyroid acting through the pituitary gland. When both pancreas and pituitary are removed, a mild diabetes occurs which is not aggravated by giving thyroid extract.

Just as removal of the pituitary improves the experimentally-produced diabetes in dogs, removal of part of the adrenal glands causes an improvement in the diabetic condition. It now appears that the pituitary may exert its influence on diabetes by acting through the adrenals, as the thyroid acts through the pituitary.

Considerable more experimental work must be done before these observations can be applied in the treatment of human diabetics, Dr. Barnes said, but these

latest discoveries have led to better knowledge of the long-suspected inter-relationship between the glands.

Research that sheds light on how the sugar-utilizing mechanism of the body breaks down in the absence of insulin, with diabetes resulting, was reported by Drs. C. N. H. Long, F. D. W. Lukens and Edith G. Fry of the University of Pennsylvania at the meeting of the Society of Biological Chemists. After exercise uses some of the body's store of sugar, glycogen, which is the form in which sugar is stored, is rebuilt from lactic acid. This process goes on in the diabetic as well as in the normal animal, but at a much slower rate.

*Science News Letter, April 7, 1934*

## CHEMISTRY

## New Antiseptic Found For Use Against Bacteria

**A**ZOCHLORAMID, a new chlorine-containing antiseptic highly soluble in water and most other solvents, was described before the American Chemical Society by Dr. Franz C. Schmelkes and Henry C. Marks, industrial chemists of Belleville, N. J. They stated that it is highly stable, not being easily destroyed by heat, nor chemically weakened by substances that usually greedily seize upon chlorine-containing compounds. Blood serum and similar organic substances are especially troublesome in that way, weakening other antiseptics when they are used against bacteria. It was for germ-killing in the presence of such organic stuffs that the new chemical was suggested.

For the benefit of those who may think the name Azochloramid is a bit of a jaw-breaker, it might be mentioned that this is just a sort of shorthand title, conferred for convenience. The correct name, which in itself describes to the organic chemist exactly what is in the compound and how it is put together, is N-N-Dichloroazodicarbonamidine.

*Science News Letter, April 7, 1934*

## ASTRONOMY

## Weather Cycles Revealed on Planets

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white and the southern belts reddish. These color changes and their period of about twelve years had already been observed by Stanley Williams. It is significant, Dr. Becker remarks, that the famous great red spot of Jupiter that appeared in the southern belts in 1878, occurred at a brightness minimum.

Saturn presents a different spectacle. At every second minimum, white spots appear in the equatorial zone, and have been observed at no other times. Since 1850, this phenomenon has occurred four times, the last occasion being Aug. 3, 1933, when a large white spot suddenly appeared. This was also a time of minimum brightness.

How are these phenomena to be explained? Dr. Becker asks. Since the planets do not shine by their own light but reflected sunlight, the changes in brightness can only be caused, he says, by changes in the reflecting power of the planet's surface. The visible surface in all of the planets considered, except Mars, consists of a blanket of clouds. He believes that what occurs can be described somewhat as follows. He says:

"At a maximum that planet begins to cover itself over with a thin veil of clouds, whose reflecting power is less than that of the underlying surface. This cloud-veil becomes gradually thicker and its reflecting power less, until the brightness-minimum is reached. During a minimum the veil may be torn in places, so that parts of the

brighter surface below show through and appear as white spots, as seen on Saturn. The rise to the next brightness maximum is then caused by a gradual dissolution of the cloud-veil. . ."

"The matter is somewhat different with Mars. Since the solid surface of this planet has in contrast with the others a very low reflecting power (like that of river sand), a covering over with a cloud-veil, which has in fact often been observed, can only result in an increase in brightness. For that reason the light changes of Mars are the mirror image of those of Jupiter; for the same event in the former produces an increase in brightness, in the latter a decrease."

The brightness changes of all the planets considered are thus reduced to substantially the same process, but a process whose details vary with each planet, and whose underlying causes must therefore reside in the planet itself. What these underlying causes are, is a question, Dr. Becker remarks, which must be left, like many other astronomical questions, for the present unanswered.

He points out, however, that the earth too, as seen for example from the moon, shows variations in brightness. This we can ourselves indirectly observe. When the moon is crescent, the rest of the disk can be faintly seen. This is due to sunlight reflected by the earth to the moon, for there is earthlight on the moon just as there is moonlight on the earth. Variations in this earthlight on the moon have often been observed, showing that the brightness of the earth varies, probably with the degree of cloudiness and the amount of snow or of vegetation.

Science News Letter, April 7, 1934

## ENDOCRINOLOGY

## Thymus Gland Speeds Maturity and Growth

THE MYSTERY of the thymus gland has apparently at last been solved by researches at the Philadelphia Institute for Medical Research of the Philadelphia General Hospital.

The thymus is capable of causing enormous precocity, Dr. L. G. Rowntree reported at the meeting of the American Physiological Society. Growth, development, maturity and fertility were speeded up at a tremendous rate in rats by doses of thymus gland extract, Dr. Rowntree and associates, Drs. J. H. Clark and A. M. Hanson, found. These effects of thymus treatment were transmitted to the offspring and were much more marked in the third generation than in the first.

The thymus gland is located in the chest. It is very large in infants but gradually shrinks as the children grow up. Its exact function has never before been known, though scientists have suspected that it had some relation to growth. Sometimes the gland is so large that it causes death in infants by interfering with the supply of oxygen to the lungs, thus choking the luckless babies. Such deaths are frighteningly sudden and mysterious, and the cause generally not known until examination of the baby's body after death shows the thymus to be enormous.

Science News Letter, April 7, 1934

## PHARMACOLOGY

## Highest Pharmacy Award To Sir Henry Wellcome

THE REMINGTON Honor Medal for 1934, highest honor of American pharmacy, has just been awarded to Sir Henry Wellcome of London, founder of the Wellcome Physiological and Chemical Research Laboratories among many other scientific institutions.

Sir Henry was born in Wisconsin and received his pharmaceutical education in this country. His report on conditions in Panama in 1910 led to increased support by the U. S. Government of the work and methods of General Gorgas at a time when these important sanitary operations were in danger of serious handicap through decreased appropriations.

Sir Henry has contributed to the knowledge of the prehistory of Ethiopia and the upper Nile regions.

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