

## ASTRONOMY

**Saturn's Rings Temporarily Vanish; Turned Edge On**

**T**HE RINGS surrounding the planet Saturn have now vanished from sight. But they have not been annihilated. In the later part of the summer they will be visible again, as a bright line crossing Saturn's disk, and extending to each side.

Though the diameter of the outer ring is 166,920 miles, and the entire system has a breadth of 37,570 miles, it is extremely thin, probably not more than ten miles in thickness. Saturn is so far away from the earth, about 793,000,000 miles on the average, that the greatest telescopes can hardly show them when we are exactly in their plane, as we were on July 1. The planet makes a complete circuit of the sun every 29½ years, and twice in this period the rings are presented to us exactly on edge. Between these times we see their northern or southern sides.

The rings of Saturn are not solid, but consist of a vast swarm of tiny moons, so close together that from this distance they appear as one mass.

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## ENTOMOLOGY

**Grasshopper Menace Grows In the Western States**

**G**RASSHOPPERS, plus failure to act on the part of Western state governments, have confronted the wheat-growing region beyond the Mississippi with a very serious threat, added to the already existing crop shortage due to the drought.

Last fall the bureau of entomology and plant quarantine, U. S. Department of Agriculture, found unusually large numbers of grasshopper eggs in the soil of the Plains and western Prairies. At that time the scientists warned the various state governments concerned, so that stores of poison bait might be ready when the insects should hatch and begin crawling this spring. Without exception, the state governments did nothing.

Now the grasshoppers have developed almost to the point where they have wings and begin flying in hordes. The Western states, alarmed, asked Congress for aid, since their legislatures had adjourned and there was no way of providing funds to meet the emergency which their inaction had permitted to arise. In its closing hours, Congress pushed through a joint resolution transferring a quarter of a million dollars from a chinchbug war fund not imme-

diately needed. Even with the speediest possible action, there is considerable doubt whether disaster can be averted.

Furthermore, the sum made available is estimated to be only about one-third of what would be needed for a really effective fight against the 'hoppers. The bureau of entomology and plant quarantine was not consulted either as to the desirability of using Federal funds for this purpose or regarding the adequacy of the amount or the timeliness of action. They are rather in the position of Gallieni's "taxicab" army before Paris in 1914: hastily mobilized, insufficiently munitioned, yet expected to stem the oncoming hordes in gray.

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## PHYSIOLOGY

**First Direct Measure of Bile Pressure Reported**

**P**ROBABLY the first two reports ever published of direct observations and measurements of pressure in the common bile duct of man are now available. (*Journal of the American Medical Association*, June 27.)

Dr. Harold A. Kipp of Pittsburgh operated on a man 78 years old and formed a communication between the gall bladder and the stomach. With a manometer he measured the variations in bile pressure in inches of normal salt solution, and found that laughing, coughing and even standing up influenced the flow of bile.

Three physicians from Rochester, Minn.—Dr. John M. McGowan and Dr. Winfield L. Butsch of the Mayo Foundation and Dr. Waltman Walters, surgeon—with the cooperation of their patients showed that there is an increase in the pressure within the common bile duct after the gall bladder has been surgically removed.

What is of greater significance to all surgeons and their gall bladder patients is the discovery by the Rochester doctors that morphine, the old standby for the colic that sometimes follows removal of the gall bladder, actually makes worse the condition that causes the pain.

"Of course, the pain disappears following administration of morphine just as it would if a black-jack had been employed; the sensory part of the brain ceases to function but the intraductal pressure rises," says the journal's editorial comment on the discovery.

Instead of morphine, the Rochester surgeons recommend prescribing a nitrite. The pressure within the common bile duct then drops and pain ceases.

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**IN SCIENCE**

## METEOROLOGY

**Lightning Becomes Star In Scientific Movie**

**L**IKE a nail gradually piercing a wooden board step by step under the impact of a carpenter's hammer, lightning strokes start from the clouds and finally reach the earth.

This "blow by blow" description of a lightning bolt coming to the earth was secured from a motion picture study made by scientists from the University of New Mexico and the University of Virginia.

Prof. J. W. Beams and Drs. L. B. Snoddy and E. J. Workman made studies of lightning strokes near Albuquerque, N. M. Using cameras they found that the first flash extended half way from the cloud to the earth. A second one followed the path of the first but went six-tenths of the way, while a third traveled seven-tenths of the distance between cloud and ground. The fourth flash reached all the way and struck the earth. Four other flashes from the cloud to earth followed at short intervals. Successive flashes occurred one hundredth of a second apart.

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## CHEMISTRY

**Inventor Patents Way to Make Quinine Tasteless**

**T**HAT bitter, shudder-creating taste of quinine is claimed not to be present in a new quinine compound for which a U. S. patent (No. 2,039,414) has just been granted to Max Hoffer, of Basel, Switzerland.

The inventor not only says that it is tasteless but also claims that it has no after taste.

The man-made quinine substitute is an entirely new chemical, made by combining quinine with a naphthalene compound. Naphthalene itself is familiar as the common moth balls or moth flakes. In the naphthalene compound there is present a chemical radical related to acetic acid, a substance present in vinegar. The chemical union between the quinine and the naphthalene compound takes away quinine's bitter taste, states the patent.

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# FIELDS

## MEDICINE

### Remove Moles to Avoid Cancer, Surgeon Advises

**B**BROWN or reddish moles on the skin should be removed before they give signs of trouble, in order surely to prevent subsequent cancer. This advice appears in a report by Dr. Dean Howard Affleck, of the surgical pathological laboratory of the Johns Hopkins Hospital and University, Baltimore (*American Journal of Cancer*, May).

Not all moles develop into cancer. In the hundreds of cases reviewed by Dr. Affleck no cancers developed in hairy moles. However, there is no way of distinguishing in advance between moles that will turn into cancer and those that will not. Those moles located in areas subject to injury and irritation are more prone to malignant change.

Once the process has developed to the point where the patient notices a change in the mole—enlargement or bleeding—it is almost always too late for treatment to succeed, Dr. Affleck finds. The only hope for the present, he concludes, seems to lie in removal of moles before they give trouble, particularly those that are subject to constant irritation.

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## ASTRONOMY

### Planets Help Make Weather By Influence on Sunspots

**I**F SUNSPOTS influence the course of weather on the earth (and presumably also on other planets) the planets in their turn influence the formation of sunspots, and thus indirectly their own weather events.

A statistical study of correlations between the positions of the three planets nearest the sun—Mercury, Venus, and earth—and the numbers and positions of sunspots has been made by Dr. Fernando Sanford of Palo Alto. Dr. Sanford has reported his results through the Smithsonian Institution, whose secretary, Dr. Charles G. Abbot, has been a leading investigator into the question of a possible connection between sunspots and weather.

An apparent hookup between planetary positions and sunspots was first no-

ticed by an English astronomer, Mrs. A. S. D. Maunder, about thirty years ago. Mrs. Maunder noted the curious fact that sunspots apparently formed in larger numbers on the side of the sun opposite the earth than they did on the side we can see.

Dr. Sanford has extended this correlation study to include the two planets that are still nearer the sun, and finds that they, too, seem to shove the sunspots around the sun to the opposite side. When any two of the three planets are in line, the influence seems to be even more pronounced than it is for a single planet.

Dr. Sanford suggests that electrical influences may hold the key to the puzzle. Sun, moon and earth are known to be negatively electrified. Presumably the other planets are electro-negative also. It is an axiom of electrical physics that like charges repel. Since sunspots are enormous electrical "storms" on the sun's surface, Dr. Sanford offers the hypothesis that the planetary charges act across intervening space to "push" these centers of solar electrical activity away.

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## CHEMISTRY

### Chemist Sorts Molecules As Factory Grades Peas

**I**T IS NOW possible for the chemist to sort out molecules, as a canning factory grades peas by passing them through sieves, by using cellulose membrane of the kind employed to wrap cigarettes.

How the "holes" in transparent cigarette wrapping material can be varied in size to allow such sorting was described by Prof. James W. McBain and Dr. R. F. Stuewer of Stanford University before the Thirteenth Colloid Symposium of the American Chemical Society.

"The holes," said the scientists, "may be adjusted smaller and smaller so that it is possible to put a solution of sugar or of salt or milk through and get only pure water."

Application of the molecule sorting, it was indicated, is in finding out how far certain molecules in a solution exist independently of one another, or whether some are in chemical combination.

"In a solution of pectin, which is the basis of most of the preparations which the housewife uses for making jellies, it is found that the colloidal particles of pectin contain one-third of their weight of molecules of water," the scientists reported.

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## GENETICS

### Cancer Heredity Not Due To Single Mendelian Factor

**T**AKING issue with Dr. Maude Slye, famous University of Chicago woman scientist whose research on cancer through the inbreeding of mice has been internationally acclaimed, Dr. Clarence Cook Little has published his most recent findings on heredity and cancer. (*Journal, American Medical Association*, June 27.)

Dr. Little, whose research, also with mice, has been done at the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine, contends that he has disproved Dr. Slye's hypothesis that the incidence of all spontaneous cancer is due to a single mendelian recessive hereditary factor.

There have recently come to maturity in Dr. Little's laboratory female mice that are first generation hybrids between cancer and "non-cancer" strains. A large number of cases of cancer have been developed among these first generation hybrids.

The amount of cancer of the breast appearing among virgin female mice of the first hybrid generation is largely dependent on the strain from which the female ancestor is derived, Dr. Little finds. If a "high" strain female is crossed with a "low" strain male the incidence of breast cancer in the virgin female hybrids is approximately 39 per cent. On the other hand, when a "low" strain female is crossed with a "high" strain male the incidence of cancer of the breast is only 6 per cent.

This difference holds good for the second hybrid generation, the research shows.

Dr. Little states that this type of inheritance is non-mendelian. It follows the maternal line and definitely establishes the existence of genetic influences outside the chromosomes.

"The accepted method of making human matings militates against the practical use of controlled heredity as a means of reducing the incidence of cancer in man," the scientist says in conclusion. "This, however, does not prevent the genetic approach to the problem in the laboratory and the use of controlled homogeneous inbred strains of mice from being extremely favorable material for pure scientific research in the nature and cause of cancer."

Dr. Little is managing director and editor of the American Society for the Control of Cancer.

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