

## ASTRONOMY

**Comet to be Visible Soon**

For the first time in a number of years a comet will be visible in the night sky a few months from now. The Pons-Winnecke comet, discovered at the Yerkes Observatory on March 3, will be less than four million miles away from the earth on June 26, according to Prof. George Van Biesbroeck, discoverer of the comet. At that time it will be visible to the unaided eye, he said. It will then be in the constellation of Aquarius, in the southeastern sky about midnight, and directly south about 3:00 a. m. Not far from it will be the bright star Altair, in the constellation of Aquila, the eagle, which can now be seen low in the eastern sky just before sunrise. At present, the comet is in the constellation of Bootes, near the bright star Arcturus, which is now in the southern sky in the early morning hours.

Though the Yerkes Observatory has in its equipment the largest refracting telescope in the world, with a lens 40 inches in diameter, the comet was discovered with a much more modest instrument. This is a reflector, in which a concave mirror replaces the convex lens of the refractor, with a mirror only 24 inches in diameter. With the greater light grasping powers of the reflector, however, it is possible to photograph fainter objects with the smaller instrument than can be seen with the big one. The comet was found on photographs made with the reflector, and appeared as a tiny round patch of nebulosity of the sixteenth magnitude. The human eye can not see objects fainter than about the fifth magnitude.

From now on, and for as long as it continues to be visible, the comet will be under the scrutiny of Prof. Van Biesbroeck and the other astronomers here. These observations will be intended to determine the position of the comet accurately, so that its future wanderings may be more accurately charted. Since it was here last, six years ago, when it did not approach nearly as close as it will now, it has been subjected to perturbations by the gravitational attraction of Jupiter and other bodies, which are very difficult to compute, and so its exact position on its present return could not be predicted precisely.

Other observations planned at the Yerkes Observatory will measure the comet's brightness, and still

others, by means of the spectro-scope, which analyzes its light, will determine its composition. The tail, which will appear as the comet approaches nearer the sun, is known to consist largely of carbon monoxide, a deadly gas frequently produced on earth as a product of incomplete combustion of coal or other fuel.

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## CHEMISTRY—ECONOMICS

**Gold or Index Price?**

A chemist, turning from his careful reading of a technical journal article telling of the latest work upon the transmutation of base metal into gold, delved into a description of a new issue of bonds.

"Safeguarded as to purchasing power of both principal and interest" was the claim. And reading further, the chemist discovered that the value of the principal and the interest to be paid are not to be firmly fixed to the dollars and cents that presumably have their roots in gold, but are to vary with the prices of commodities. When living is dear, the bonds will be worth more and pay more interest in dollars and cents; when things are cheaper, less interest will be paid and the principal value in dollars decreases. The index number of wholesale prices as issued by the United States Bureau of Labor Statistics each month governs the quarterly interest payments. Let the "zero" index number of 157.5 rise 10 per cent. to 173.25, and the interest payment will jump from \$17.50 to \$19.25.

Can it be that the bankers and financial experts have more confidence in the practical fulfillment of the alchemist's dream than chemists themselves? asked the chemist. Do they expect that Miethé, Germany's modern alchemist, and Nagaoka, Japan's claimant to transmutation fame, will be able to take the lead of commerce and the power of coal or water and produce the yellow dirt upon which the financial system of the world rests?

The chemist thought of the minute grains of gold and the immense power necessary to produce them. Then he remembered the vast fluctuations in the value of money that man-made war and disturbed economic conditions had caused since 1914. And he concluded that it was financial and not chemical knowledge that had led the bankers to hitch their bonds to a commodity index number.

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## ZOOLOGY

**Mystery of Bird Migration**

Bluebirds, meadow larks and robins are arriving daily from the savannahs of the South, but scientists are as much in the dark as ever over why they do it. The reason at the bottom of the long, long trek that the denizens of our backyards take twice a year is a mystery that can be little more than guessed at, according to Dr. Alexander Wetmore, president of the American Ornithologists' Union.

"The entire act of migration is so utterly complex that no single factor may be ascribed as the absolute cause," he declares. Dr. Wetmore, who is also assistant secretary of the Smithsonian Institution, believes that migration has arisen from movements induced by seasonal and climatic changes until it has become a hereditary instinct that is now actuated by physiological causes.

In a recent book on bird migration, Dr. Wetmore has attempted to correlate the findings of ornithologists of the past 200 years with his own field observations in both North and South America. Around 3,000 feet is the average height attained by migrating birds, he says, since flight becomes difficult above that point.

The greatest recorded speed for a bird is held by the common swift of Eurasia, which was observed from an airplane to be jogging along at 70 miles an hour in normal flight. The smaller perching birds fly from 20 to 37 miles an hour, while ducks and geese range from 42 to 59 miles.

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## AGRICULTURE

**Heating Alfalfa Seed**

Alfalfa seeds, troublesome to farmers for years because a certain percentage of them have such hard, impermeable coats that water has a hard time getting through to make them germinate, can be conquered by heating before they are planted. Miss Anna M. Lute, of the Colorado Experiment Station, has worked this subject over a period of fifteen years. She tried a considerable number of temperatures, but found the most effective to be 167 degrees Fahrenheit, at which 94 per cent. of the seeds were rendered permeable to water. Temperatures below 122 degrees, even when continued for as much as eight hours, had little effect on impermeable seeds. Tests of heated seeds after five months' storage showed no loss of vitality.

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