



550 B.C. ADVERTISING GAVE ATHENS POTTERY BOOM

Five of the fifty Greek vases in the Albert Gallatin Collection loaned for exhibition to the University Museum. They represent the fifth and sixth centuries B.C., when Athenians advertised their pottery art and "got results."

lead and other gasoline additions. The new experimental army aviation gasoline was composed half of iso-octane and half of good quality ordinary aviation with ethyl addition.

The new superior gasolines will cost more per gallon than present aviation

fuels but since they will contain more power per pound, they promise to be actually more economical. Dr. Edgar urged the consideration of fuel cost per ton-mile of payload carried rather than the cost per gallon.

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PHYSICS

Universe Infinite In Particles; Finite In Space

THE universe contains an infinite number of particles but its volume is finite. This is the paradoxical answer given by Prof. E. A. Milne of Oxford to a Science Service representative upon the occasion of his receiving the Royal Astronomical Society gold medal.

"Is the universe infinite?" Prof. Milne was asked.

"It is necessary to distinguish between whether the number of particles in the universe is infinite and whether the amount of space used by one observer is infinite," he answered. "I believe the right answer is that most probably the universe has an infinite number of particles in a finite space."

Imagine an ideal telescope which is infinitely powerful, Prof. Milne suggested. Then one would see that the more distant the nebulae the nearer they would be together. They would be closer and closer, fainter and fainter and ultimately they would shade into a continuous background.

"What would this be like?"

"Picture yourself inside a cloud which was infinitely dense at its circumference," said Prof. Milne.

Prof. Milne is recognized for his mathematical explanation of the expanding universe in terms of ordinary three-dimensional or Euclidean space.

"I don't believe curved space is anything more than a possible method of expression," Prof. Milne said. "I think that my calculations using Euclidean space provide a greatly simplified picture of the universe."

He did not oppose Einstein's work, however, and he explained that Einstein's early work is fundamental to his theory.

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It was supposed that garden peas lose sweetness after picking because the sugar turned to starch, but tests indicate that the sugar is apparently used in respiration.

ARCHAEOLOGY

Advertising Stunts Were Practised By Greeks, Too

THE ancient Greeks, too, had clever advertising stunts. In the sixth century B.C. olive oil was given as prizes to foreign athletes competing in the Panathenaic games—and the Athenians packaged the oil prizes in beautiful vases.

As a result there came from Egypt, Africa, Russia, Spain and Gaul, a flood of orders for Athenian vases and Athens obtained a virtual monopoly of the world's pottery trade.

This close attention to making the package attractive, which sold more of the package-vases, is the reverse of what modern advertisers do when they improve the package to sell more of the contents.

Jotham Johnson, archaeologist of the University Museum in Philadelphia, Pa., told of the advertising techniques of the ancient Greeks during a loan exhibition of one of the world's best private collections of the Athenian vases.

In addition to vases, Athenian potters made jars, flasks, pitchers, drinking cups and other utensils, ornamental and practical. So complete was the Athenian monopoly that the best artists from other countries were imported to design the products. Connoisseurs today judge that Athenian vases reached their highest beauty in the fifth century B.C.

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ENTOMOLOGY

Bright-Colored Butterflies Avoided by Birds

BIRDS really do avoid butterflies whose bright "warning" coloration advertises their inedibility, Prof. G. D. Hale Carpenter of Oxford University declares (*Nature, Feb. 2*).

Prof. Carpenter received the information on which he bases his communication from a naturalist in Africa, T. H. E. Jackson, of Kitale, Kenya Colony. On an expedition into Uganda, Mr. Jackson noticed birds feeding on butterflies that crowded among the flowers of a blossoming tree. Under the tree he found many wings of the insects, broken off by the birds before they swallowed their prey, some of them with the marks of beaks imprinted plainly on them. By comparing the numbers of these witnesses of insect tragedy with the relative abundance of the various species he

could see in the tree, Mr. Jackson made an estimate of the feeding preferences of the birds. This estimate, he says, supports the idea that birds really do avoid "warningly" colored butterflies.

In this conclusion, Prof. Carpenter and Mr. Jackson are at variance with the opinion of an American zoologist, W.

L. McAtee of the bureau of biological survey, U. S. Department of Agriculture, who some time ago stated that insects and other animals get killed and eaten approximately in proportion to their numbers in a given place, regardless of coloration.

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the convicts were laborers, skilled or unskilled.

A far larger proportion than you might expect were foreign born. Of the 1,166 victims, 481 were foreign born, and 55 per cent. of these were Italians. Of the 632 native born victims, 112 were Negroes. The convicts showed a similar picture of foreign and Negro frequency. Of the 388 convicted, 142 were foreign, and 91 were from Italy.

The typical murderer is not a college graduate putting his learning to evil uses by concocting weird poisons for his victims. He is a comparatively uneducated person. Of the 388 persons convicted of murder included in this survey, only 38 had ever attended high school and of these only six had ever gone to college. Not a single one of the women had gone beyond elementary school. And 62 had had no formal education at all.

Poisoning Infrequent

Actually, poisons are very seldom used. By far the most common way murdered persons meet death is by firearms, 64 per cent. of the men and 59 per cent. of the women having been shot down. Next in frequency comes the knife or other cutting or piercing instrument, which is particularly common among the Negroes.

Fracture of the skull or a blow on the head, such as killed the little Lindbergh baby, accounted for 78 of the male deaths and eleven of the female. But burns, acid, and poison together took toll of only eight men and nine women.

The solution of the murder problem in the United States does not lie in excluding persons of any special hereditary background, is the conclusion of the investigators, J. V. DePorte and Elizabeth Parkhurst, who made the survey (*Human Biology*, Feb.)

The germ plasm has nothing to do with the case, they conclude. Although the homicide rate was exceptionally high among Italian immigrants, the rate among the native-born of Italian parentage was only 8 per cent. of the rate among Italian immigrants, and the rate among the immigrants much higher than that prevailing in Italy.

The only guarantee of the worth of an individual for the breeding of a superior race is not its own superiority, but the superiority of its progeny, and this is just as true of the human "bean" as of the vegetable bean about which the statement was originally made, the investigators conclude.

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CHEMISTRY

20 New Kinds of Matter Reported By British Chemist

DISCOVERY of some 20 new varieties of the chemical elements, called isotopes, was announced to the Royal Society, London, by the world authority and Nobelist, Prof. F. W. Aston of Cambridge, as the result of several years of exacting spectrographic work on a dozen elemental substances.

The census of isotopes kept by Prof. Aston shows that 247 stable element varieties are now known from 79 of the 92 elements.

Isotopes in chemistry correspond roughly to non-identical twins in animals, since they are the same stuff but the atom of one isotope has a different mass or weight than another isotope of the same element.

The new isotopes are of the elements hafnium, thorium, rhodium, titanium, zirconium, calcium, gallium, silver, carbon, nickel, cadmium, iron and indium. They were discovered by mass spectrograph analyses made either by the anode ray or more usual discharge method. The mass spectrograph is an instrument that serves as an extremely sensitive balance for weighing the elements.

Important also was Prof. Aston's announcement that he had discovered rays from hafnium, thorium and rhodium for the first time.

Because an average of three and a tenth isotopes for every chemical element has been discovered, this is taken to mean that there is a stable elementary atom for every whole number weight from one to 210.

"This is an astonishing situation," Prof. Aston said, "and I believe the discovery of many more such isotopes is unlikely at least for many years unless by quite new methods."

Prof. Aston cited with approval the theory of Prof. Gamow, Soviet physicist now lecturing at George Washington University, Washington, D. C., that if more isotopes are discovered they will probably be radioactive, breaking down into other isotopes.

Not content with his pioneering explorations of atom varieties, Prof. Aston said that he would modify his apparatus in the hope of obtaining still finer and more accurate measurements of atomic masses.

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SOCIOLOGY

Most Murderers Are Laborers, Survey Shows

DO you picture the average murderer as being a "master mind" with superior crafty intelligence and good education, and the victim as a "wealthy clubman" or a person of wealth and prominence like Lindbergh?

Study of the homicides actually committed over a decade in 37 counties in New York state shows that this favorite picture of fiction is not based on fact. If the New York situation is typical of the nation as a whole, neither victims nor persons convicted of murder belong, in general, to the respectable, well-to-do classes. It was found that 57 per cent. of the victims and 77 per cent. of

● RADIO

Tuesday, March 5, 4:30 p. m.

THE MAGIC AGE OF ALLOYS, by A. B. Parsons, Secretary, American Institute of Mining & Metallurgical Engineers.

Tuesday, March 12, 4:30 p. m.

GLAND FACTORS IN PERSONALITY, by Dr. R. G. Hoskins, Memorial Foundation for Neuro-Endocrine Research, Harvard University.

In the Science Service series of radio addresses given by eminent scientists over the Columbia Broadcasting System.