

# physical sciences notes

## HIGH ENERGY PHYSICS

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### Joint Group Appointed for 200 Bev

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The Universities Research Association has selected a joint firm to manage architecture, engineering and construction for the 200-400 Bev accelerator at Weston, Ill.

The selection should help speed completion of the accelerator, now expected in 1972, since it is the first time that a large accelerator has been designed and built by one firm, rather than three or more separate ones.

The firm is known as DUSAF—a joint venture of Daniel, Mann, Johnson, and Mendenhall; the Office of Max O. Urbahn; Seelye, Stevenson, Value and Knecht, and George A. Fuller Co.

## ASTRONOMY

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### 98-Inch Isaac Newton Telescope

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To indicate the importance placed by Britain on astronomy, Queen Elizabeth inaugurated the 98-inch Isaac Newton telescope of the Royal Greenwich Observatory in Sussex Dec. 1. The instrument was first conceived 21 years ago by the late H. H. Plaskett, then president of the Royal Astronomical Society.

The primary mirror is 2.5 meters in diameter and 41 centimeters thick. An unusual system of supports has been provided for the 9,000-pound mirror, balancing the effects of gravity in all orientations of the telescope. This is done with an air bag having three concentric annular sections inflated to about 1.3 pounds per square inch over atmosphere pressure. The three sections are necessary because the concave mirror is thinner toward its center.

Ownership of the 98-inch telescope is vested in the Science Research Council, which also manages the 74-inch Radcliffe reflector at Pretoria, and which will eventually have responsibility for the 150-inch Anglo-Australian reflector to be built in Australia. The Council has a large telescope users panel to allocate observing time to qualified British astronomers.

## CRYOGENICS

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### Determining Temperatures Near Absolute Zero

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As the studies of materials at temperatures near absolute zero have become increasingly important during the last 20 years, the necessity for determining their temperatures exactly has correspondingly increased.

Cerous magnesium nitrate, or CMN, has been gaining widespread use for thermometry below two degrees Kelvin, even though its temperature scale has been of somewhat questionable reliability. Drs. R. P. Hudson and R. S. Kaeser of the National Bureau of Standards have therefore rechecked its scale.

Their study confirms that CMN follows the accepted scale to within one and a half thousandths of a degree above absolute zero, rather than within three thousandths, as had been previously reported.

## PUBLIC POLICY

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### Discussion of Issues Debated

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The 24,000 members of the American Physical Society will consider at their January meeting in Chicago whether or not the Society should broaden its purposes and aims to include discussion of public issues.

Copies of a constitutional amendment, proposed by a group of members and oriented toward discussion of public issues, and ballots for voting on the adoption of the amendment are being distributed to APS members prior to the meeting.

Since the issue bears not only on the content of APS meetings but on the nature of the Society itself, APS has asked PHYSICS TODAY to publish a sample of letters to the editor expressive of different shades of opinion on the proposed amendment—but not on specific public issues. The letters will appear in the January issue.

## ASTROPHYSICS

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### Galaxies as Gravitational Lenses

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It has been suggested that quasars are not the queer sources of extremely high energy they seem to be but optical illusions resulting when the light from a normal galaxy is focused by passage through another galaxy (SN:8/21/65).

Dr. Dror Sadeh of the E. O. Hulburt Center for Space Research at the Naval Research Laboratory has examined mathematically the distribution of galaxies and finds that galactic focusing does not occur if they are randomly distributed. However, if most galaxies exist in pairs, then there would be about 30 occurring exactly one behind the other in such a way as to focus the light from the more distant galaxy.

Dr. Sadeh reports in the Dec. 1 SCIENCE that this model of twin galaxies explains the variations in intensity observed for quasars, but fails to explain other observed properties. Therefore, he concludes, quasars are exactly what they seem: "real entities having large masses, small radii and intrinsically high luminosities."

## PHYSICAL CHEMISTRY

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### Electron Excited Luminescence

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An electron microprobe X-ray analyzer, routinely used for determining very small quantities of chemical materials, has been modified by University of Pennsylvania scientists for analyzing meteorites.

Elemental composition of specific meteorites is determined by charged particle bombardment, correlated with the type and intensity of the light emitted.

With a special monochromator, colors emitted from samples as a result of electron bombardment can be separated into individual bands that can be detected by a photomultiplier and then amplified, showing the elements the meteorites contain.

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