to the editor

We meant barium

In this laboratory we enjoy Science News very much. It furnishes us with a very facile medium for keeping in contact with the latest highlights in science and technology. The new format is a distinct improvement over the old one. Rarely do we find an error.

In the Nov. 2, 1968 issue on page 438 (center column, first sentence of first paragraph) you state: "At the low end of the weight scale where helium, lithium, or barium are found, the complexities of the nuclear binding force make nuclei that are actually lighter than the sum of their parts." I am sure that you meant beryllium, not barium. This paragraph is unfortunate. All nuclides above light hydrogen weigh less than their component nucleons, otherwise they could not exist except in a most fleeting fashion. The salient point is that in certain nuclear reactions: $4H^1 \rightarrow He^4$ ($\Delta m = 0.03196$), $2H^2 \rightarrow He^4$ ($\Delta m = 0.02554$), $Li^6 + H^2 \rightarrow 2He^4$ ($\Delta m = 0.02385$), and $Be^9 + He^3 \rightarrow 3He^4$ ($\Delta m = 0.02037$). There is a rather large positive mass difference between the products and reactants and this is released as energy. The first reaction is impractical in a controlled man-made device because it involves an exceedingly low probability four body collision. The second reaction, involving deuterium, is the most favorable case because it involves the lowest electrostatic repulsion forces and yields the most energy per unit mass.

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(Barium is the material used in the German Wendelstein experiments. Beryllium of course would be more practical for power purposes although present plasma research is still far from that. Ed.)

(See Letters, p. 566)

films OF THE WEEK

Listing is for readers' information of new 16mm and 8mm films on science, engineering, medicine and agriculture for professional, student and general audience. For further information on purchase, rental or free loan, write to distributor.

THE EVERGLADES: CONSERVING A BALANCED COMMUNITY. 16mm, color or b&w, sound, 11 min. Shows how requirements of new residential areas of Florida are endangering many species of wild life. Audience: junior or senior high school. Purchase color $135 or b&w $70 from Encyclopedia Britannica Educational Corporation, 425 North Michigan Ave., Chicago, Ill. 60611.

PLASMA: THE FOURTH STATE OF MATTER. 16mm, color, sound, 9¾ min. The earth's ionosphere or the matter in a glowing neon sign are examples of plasma, the fourth state of matter, where the atoms themselves break down into free electrons and protons, or ions. As yet, relatively little is known about plasma, but it may someday enable men to produce inexpensive energy by fusion, just as the sun now does. Audience: junior or senior high. Purchase $125 from Association Films, 11559 Santa Monica Boulevard, Los Angeles, Calif. 90025.

SLEEP: THE FANTASTIC THIRD OF YOUR LIFE. 16mm, color, sound, 51 min. Describes recent research regarding the nature of sleep. Discusses current theories concerning the complex psychophysiological states involved in sleep, and presents some common problems associated with sleep and the various ways people have attempted to alleviate them. Audience: general. Purchase $600 or rental $30 from McGraw-Hill Films, Dept. DF, 330 West 42nd St., New York, N.Y. 10036. (Produced by ABC-TV News.)

STOP OR GO: AN EXPERIMENT IN GENETICS. 16mm, color, sound, 29 min. A documentation of an experiment which successfully analyzed the genetic code of a mutant virus. Shows scientists at Rockefeller University as they separate the mutant virus from non-mutants, grow new generations of the mutants, extract the mutants' genetic material, and test whether or not this material will manufacture a certain protein known as the coat-protein. Audience: high school, college, general. Purchase $240 or rental $8.65 from NET Film Service, Indiana University, Audio-Visual Center, Bloomington, Ind. 47401.

THE STORY OF A TROUT. 16mm, color, sound, 10 min. Explains the fertilization and life cycle of the trout, with special attention paid to the efforts of conservationists. Traces the breeding habits of one species, and the growth of the young through the rigorous swim upstream. A pointed message comments on man's over-fishing, polluting, and the elimination of trout streams. Audience: elementary, junior, senior high school. Purchase $125 from Fleetwood Films, 34 Macquesten Parkway South, Mount Vernon, N. Y. 10550.

STRANGENESS MINUS THREE. 16mm, b&w, sound, 45 min. Tells why physicists are addicted to their profession by weaving together interviews with Murray Gell-Man, Yuval Ne'eman, Nicholas Samios, and Richard Feynman on how the theory which predicted the properties of Omega-minus was developed. Audience: senior high school, college, general. Purchase $275 or rental $35 from Peter M. Robeck and Company, 230 Park Ave., New York, N. Y. 10017. (Produced by BBC-TV.)

TERRE ADELIE. 16mm, color, English sound, 25 min. Shows the activities of the summer expedition of 1966-67 at the Dumont-D'Urville base of Terre Adelie in the Antarctic, and in particular, the first rocket shots in the Antarctic. Expedition was organized by the National Center of Spacial Studies and the Ionospheric Research Group of France. Audience: general. Handling fee of $5 from Society for French American Cultural Services and Educational Aid, 972 Fifth Avenue, New York, N.Y. 10021.

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