

## Man's Evolution

*Anthropology*

Man, until now almost as passive a plaything of the evolutionary forces as the animals beneath him, may in the future be expected to take a hand in the directing of his own development.

This was the central theme of an evening address by Dr. Ales Hrdlicka, anthropologist of the U. S. National Museum, before the meeting of the American Philosophical Society.

"Man has given and still is giving a vast amount of thought to his life after death, but only relatively little to his future on this earth," said Dr. Hrdlicka. "The latter attitude, however, is undergoing a substantial change, due to the teachings of evolution."

"When the most earnest and competent students of Man are asked 'What about human evolution,' they can only answer that, while many of the details are still unknown or uncertain, and while here and there an impatient scientific worker may express some revolutionary hypothesis, nevertheless, in general, of all the major natural facts, none today is better documented and better established."

Man will be able to do something toward the shaping of his new body, but his greatest influence will make itself felt in the (*Turn to next page*)

## Elan Vital?

*Chemistry*

Sulfhydryl, which is made of one sulphur atom and one atom of hydrogen, is the stuff that makes possible the growth of plants and animals by the division of their cells. Since life can not continue, nor new organisms arise without cell division, this atom-pair may fairly be said to be the key-compound to life itself.

At the meeting of the American Philosophical Society, Dr. Frederick S. Hammett of the Wistar Institute explained the steps in his experimentation that have led to this important conclusion. The first hint came from the claim that lead compounds retarded the growth of cancer cells. Since a cancer is only a mass of ordinary cells gone mad about dividing, it would appear that anything that stopped their abnormal career must be something that removed from them whatever gave them the impulse to divide.

Dr. Hammett grew plant roots in solutions of lead compounds, and found that though the cells could increase in size their rate of division was markedly re- (*Turn to next page*)

## Giants Made to Order

*Biology*

When the father of Frederick the Great wanted his regiment of oversize grenadiers, he had to send out his recruiting sergeants to coax or diknap sixfooters all over Europe. But future giant-fanciers will be able to get their giants merely by feeding infants properly adjusted doses of glandular extracts. And "internal six-footness"—intellectual super-development—may possibly be brought about in the same way.

All this, if the prophecies uttered before the American Philosophical Society by Dr. Oscar Riddle of the Carnegie Institution of Washington reach fulfillment. It will not be a case of "environment" overcoming "heredity," but rather a man-controlled readjustment of the interplay of these two forces, which has hitherto been left to chance. Recent researches on the effects of special conditions applied to the early stages of organisms have shown the feasibility of controlling development. While these have so far been applied mainly to sub-human forms of life, their application to our own race is merely a matter of time and the gathering of further data and skill in manipulation.

"To produce these changes in an individual and in a race it will of course

be necessary to bring about changes in specific conditions during various stages of life and development," he continued. "Some of these special conditions will doubtless have to be applied during intrauterine—or even in preuterine—life, some in childhood, some in adolescence and some in later life. This will mean indeed a sort of super-medicine, a super-education, and a continuous and very personal application of a great body of knowledge. It will be a recurrent work, necessary in every generation, as is today all the work of education and of medicine."

"The development of a generation of giants, for example, would mean no transmission of 'inheritance' of gigantism, since no change is made in the combination of genes carried by these giants. If each next generation wants its giants it must make them, just as it must now make its educated men. But here we get a closer view of how this powerful creative work on the part of man may affect the thought and purpose of the man of tomorrow."

*Science News-Letter, April 27, 1929*

Iodine is distributed in small quantities throughout the animal, vegetable, and mineral kingdoms.

## Many New Elements In Sun

*Astrophysics*

Searching the sun's face with the spectroscope, the magic instrument of the scientist that can analyze and identify elements hundreds of millions of miles beyond the reach of his hand, a California chemist has added 23 elements to the list of the earth-ingredients known to exist in the sun. Dr. Charles E. St. John of the Mount Wilson Observatory, who conducted this work, laid his results before the meeting of the Academy.

When ordinary white light is passed through a suitably shaped crystal prism, or reflected from a finely ruled mirror-grating, it is spread out in a rainbow-colored band, or spectrum. But if a single element is heated until it shines, and that light passed through the prism, there will be merely sharply marked lines of definite colors, in mathematically predictable places.

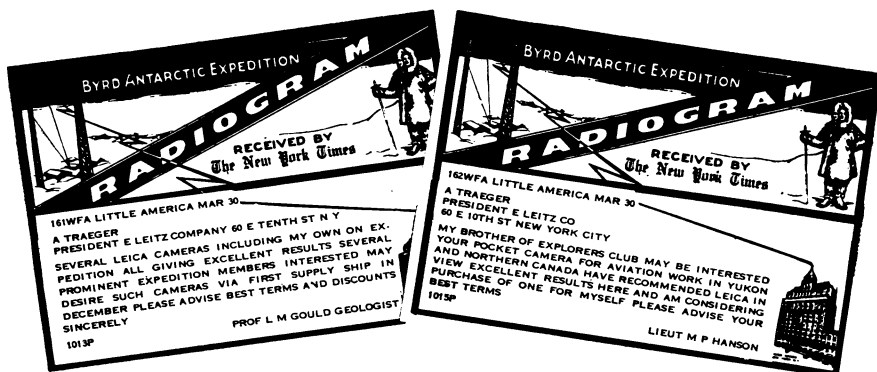
Using this principle, and gathering light from the sun not only under normal conditions but also from its outer layers during eclipses, from the vast vortexes we call sunspots, and from points of other unusual solar

behavior, Dr. St. John assembled a huge array of photographic plates showing these spectral lines which a chemist or a physicist can read. Some of them were made by parts of the sun's visible light and some by the invisible infra-red and ultra-violet radiations.

A number of the elements he identified for the first time on the sun are well known and abundant on the earth, like oxygen, sulphur and carbon; others, like hafnium, europium and gadolinium, are so rare that they are merely names even to the majority of chemists. The precious metal platinum was identified by three lines. Helium, discovered many years ago on the sun by spectroscopic method before it was found on earth, Dr. St. John relocated in disturbed parts of the solar globe.

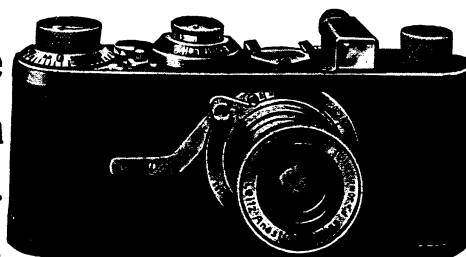
The full list of elements added to the known chemical stock of the sun is as follows: helium, in disturbed regions; lithium, in sun-spots; boron, as boron oxide in spots; carbon, as atomic carbon; (*Turn to next page*)

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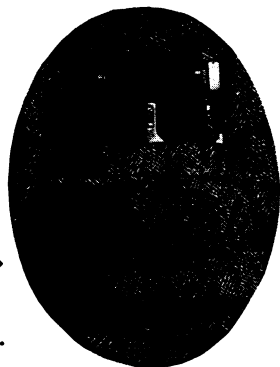
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### Sun Elements—*Cont'd*

atomic nitrogen, in the infra-red; atomic oxygen, in the infra-red; sulphur, in the infra-red; gallium, germanium, rubidium, in sun-spots; rhodium, cadmium, indium, in sun-spots; antimony, caesium, samarium, curium, gadolinium, dysprosium, erbium, ytterbium, hafnium, platinum.

There are 92 possible elements, 90 of which have so far been found on

earth, Dr. St. John said. Of these, 58 have been identified in the sun's atmosphere. This does not mean that the others are not in the sun. Some of them, especially several elements which are normally gaseous on earth, have their lines far out in the ultra-violet, where, because of atmospheric interference on their way to the earth, they are absorbed and vanish before reaching the lower levels of air.

*Science News-Letter, April 27, 1929*

### Man's Evolution—*Cont'd*

evolution of his mind, the Washington scientist declared.

"Man will slowly become ever more a helper, and in a sense a co-creator in his further evolution, particularly that of his sensory and mental faculties; and the knowledge of this will furnish, begins already to furnish him with mighty new criteria of conduct, the criteria of what will be advantageous and what adverse to this further evolution.

"The actual future changes of man can be foreseen for only a limited time to come. They will affect his stature, skull, facial parts, teeth, some of the internal organs, his arms, hands and feet; but the principal acquisitions will be, there is a strong probability, those of a higher organization, with higher effectiveness and endurance, of the brain and the sensory as well as the nervous system.

"The more important of the changes, particularly those of the brain, can not be realized easily. There are many obstacles and dangers ahead and the road of advance will be littered, as in the past and now, by the unfit.

"As to the more distant future of man, no legitimate deductions are possible."

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### Elan Vital—*Cont'd*

duced. In the region of most rapid growth lead precipitates appeared, which proved to be compounds of lead with the sulphhydryl group. In roots permitted to grow normally, abundant sulphhydryl was found associated with the most actively dividing cells.

A further step in the evidence was obtained when sulphhydryl-containing compounds extracted from actively growing roots were applied to the tips of other roots. Under proper chemical conditions, these compounds caused acceleration of growth. Finally, synthetic compounds containing the same pair of atoms were similarly used and produced similar results, both in root tips and in the division rate of single-celled water animalcules.

The evidence thus seems to be fairly conclusive that this pair of atoms, that tag along hand in hand like brother and sister, attaching themselves to a wide variety of other chemical compounds, are really the "life of the party" in the most literal sense of the term.

*Science News-Letter, April 27, 1929*