



#### DEVIL'S CLUB

*That is the awesome name of the tree from which this fossil leaf came. The tree, whose scientific name is Aralia, is one of the most common of California's fossil forests. The leaf is one of more than forty kinds found at You Bet.*

University of California, is picking over the placer washings for nuggets of knowledge. Thus far he has found more than forty kinds of fossil leaves, including figs, magnolias, palms, sycamores and avocados. This makes up a

complex of plant growth quite alien to the You Bet region of the present day, and indicates that California of the far past had an even warmer climate than the California of today enjoys.

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#### CHEMISTRY

## Electrochemical Method Used To Concentrate Rare Earths

**A** NEW method for concentrating many of the so-called rare earth elements, whose purification has baffled chemistry for years, was presented to the meeting of the Electrochemical Society.

Prof. B. S. Hopkins of the University of Illinois' chemistry department told of his new experiments with salts of the rare earths in collaboration with Dr. L. F. Audrieth. Prof. Hopkins is famous for his discovery, in 1926, of the element illinium, a metal with valuable properties.

The rare earths have atomic numbers from 57 to 71 in the periodic table of

the chemical elements. They are seldom shown on the familiar classroom charts because they unduly complicate the classification of the elements in a systematic arrangement.

Minerals containing the rare earths occur chiefly in Scandinavia, the Urals, America, Brazil, India and Australia. Owing to the extraordinary chemical similarity of the members of the rare earths and to the further fact that they are associated in nature, it is very difficult to separate them and to prepare them in the pure state. Prof. Hopkins' report to the society describes a new

method for solving this problem, at least in part.

The first stage in the concentration of rare earths, reports Prof. Hopkins, is to mix them with mercury, for which they have a great affinity. Mercury amalgams of the rare elements are thus obtained.

The preparation of mercury amalgams is not the easy process used by dentists in making silver amalgams for dental fillings. It is necessary to use electrochemical processes where the conducting solution is mercury chloride.

Rare earth amalgams prepared electrochemically, Prof. Hopkins indicates, are liquid or pasty masses containing from one-half to three per cent. of the rare earth metal by weight. The amalgams are easily decomposed by exposure to air and moisture. They must be preserved in a vacuum or in an inert atmosphere like neon, argon or helium.

"The amalgams may serve as the starting point for the preparation of the corresponding rare earth metals," Prof. Hopkins cautiously concludes.

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#### PHYSICS

## New Instrument Measures Heat of Various Sounds

**W**HILE the music of some of the popular orchestras of the radio is often referred to colloquially as "hot," scientists at the Massachusetts Institute of Technology have devised new and more accurate methods of determining the heat of sound.

Instead of measuring sound variations in terms of air pressure as does a microphone, the new sound thermometer records the alternating temperatures produced by sound waves travelling in air.

The device was developed at the Round Hill estate of Col. Edward H. R. Green, M. I. T. research station near South Dartmouth, Mass., by Ellis A. Johnson of the Institute under the direction of Prof. Richard D. Fay and Prof. Louis Harris.

The sound thermometer is essentially an exceptionally delicate thermocouple comprising thin metal strips of dissimilar metals, bismuth and antimony for example. Each strip is but .00001 centimeter in thickness and is mounted on cellulose acetate films of the same thickness. Together the film and strip are mounted on a thin mica frame.

The thinness of the metal strips may be appreciated when it is realized that a million of them together would make a pile not much more than an inch

thick. The amplifier used to "step up" the tiny electrical current generated at the junction of the two dissimilar strips of metal by the heat of sound, is capable of responding to one one-hundred-millionth of a volt.

The thin metal strips or films are so delicate that they do not disturb the sound field they are measuring as do other devices. The sound thermocouple with its amplifier is about 100 times more sensitive than previous couples. It is capable not only of recording the minute variations in temperature produced by sound waves but of recording these variations when they are occurring thousands of times each second.

Already the new device has been used to measure the adiabatic heat produced in a sound field up to frequencies of 10,000 cycles a second, and its range can be extended to 300,000 cycles.

The delicacy of the thermocouple makes it an excellent instrument for measuring sound which the ear can not hear, and it is adapted also for light measurements.

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#### ARCHAEOLOGY

### Urges Museum Purchase Of Indian Collection

**H**OPE that the vast Payne collection of Indian relics will be acquired by some educational institution or museum, so that its features of scientific value may be preserved, is expressed by Dr. Warren K. Moorehead, well-known archaeologist of Phillips Academy at Andover, Mass.

The collection, left by the late Edward W. Payne, of Springfield, Ill., is famous because it is so enormous that only three or four museums outrank it in numbers of Indian antiquities.

Dr. Moorehead and several other archaeologists are planning to examine portions of the collection, he stated. Dr. Don Dickson of Lewistown, Ill., has charge of the collection.

From previous examination of portions of the huge array of pipes, blankets, and other articles at various times, Dr. Moorehead has estimated that there are at least half a million objects from the Mississippi Basin alone.

Since the death of Mr. Payne, in 1932, the fate of the collection has hung in the balance, and archaeologists have hoped that its features of scientific importance would not be lost by indiscriminate scattered sale.

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#### GENERAL SCIENCE

## Editor of British Journal Urges Science Service There

### Significance of Scientific Discoveries in Daily Life Should be Pointed Out by Competent Writers

**A** STRONG plea for cooperation between science and the press in Great Britain along the lines of Science Service in America was voiced by Sir Richard Gregory, Bart., editor of the British science journal, *Nature*, in his presidential address before the Association of Special Libraries and Information Bureaux.

Stating that "most admirable work for science publicity has been carried on in the United States since 1921 by Science Service," Sir Richard said that "it would be to the advantage of science and the newspaper press if similar organizations for science publicity were established in other countries and cooperated with one another in an international science agency."

"Art and letters, music and religion, have their interpreters in the periodical Press and cannot complain of any lack of attention to their works or teaching," Sir Richard said. "In its human interests, science can make just as wide an appeal as any of these, but there are few who can review scientific matters with the independent and critical mind which estimates the value of opinion or performances in other spheres. A bare announcement of a scientific discovery may be worth publication as an item of news, but not much more so than a report that an important creative work has been completed by an eminent artist or man of letters. Supplementary to such news, reasons must be given why the discovery or work is of particular significance; which means that its characteristics must be clearly described by a competent writer."

#### Duty of the Press

"It is surely the duty of the Press," Sir Richard declared in his concluding remarks, "as a service of public utility and the man of science as a citizen as well as a discoverer, to affect a rapprochement in order to create a public opinion which will ensure that no advantage may be lost which might accrue from the application of the results of scientific research to the needs and

amenities of daily life. A more intelligent and more intelligible consideration of scientific work and thought is desirable in the public Press because of their close contacts with many national and international problems. Under the conditions of modern civilization, the community in general is dependent upon science for its continued progress and prosperity. Under the influence of modern scientific discoveries and their applications, not only in industry, but also in many other directions, the whole basis of society is rapidly becoming scientific; and to an increasing extent, the problems which confront the national administration involve factors which will require scientific knowledge for their solution.

#### Service to Science and Public

"It is in these directions that the Press can render the greatest service to science and the public at the same time. Under the present social and educational system, it is not possible to hope that at any very early date our schools will turn out a population of scientifically-trained men and women. But it is becoming recognized, though slowly too, that what is needed is not so much detailed or expert knowledge of science, as the scientific outlook. The function of the Press, more readily to be appreciated perhaps when something of this scientific spirit has been inculcated in the schools, might very well be, by fostering this outlook, to ensure that the problems of government and administration of society and of economics, are approached with scientific understanding."

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Spruce wood from the Northwest coast may well equal European woods for violin making, if carefully selected and seasoned.

That there were camels in Egypt as far back as the Old Kingdom, over 1600 years before Christ, is shown by camel's hair cord from that time.