

## SCIENCE NEWS

Science Service, Washington, D. C.

## E. W. SCRIPPS AND SCIENCE SERVICE

INTENSE humanism, enormous avidity for knowledge, and faith in the truths of science characterized E. W. Scripps, in the opinion of Dr. William E. Ritter, his life-long friend and president of Science Service, the institution for the popularization of science through newspapers founded by Mr. Scripps. Dr. Ritter in a statement said:

After the world war, Mr. Scripps was greatly impressed with the idea that since the world was more than ever committed to democracy, democracy must become more intelligent than it ever has been.

How, he reasoned, is it possible to conceive a public intelligent enough to live healthily, efficiently, sanely, and happily in the modern world without much acquaintance with the facts and principles of the physical and humanist sciences?

Furthermore, he continued to query, since the newspaper is the greatest single agency for informing the public of what goes on in the world from day to day, and for molding public opinion on many subjects, what is more natural and more important than that this agency should supplement whatever can be done by other agencies, as the schools and colleges, in disseminating scientific knowledge among the people generally?

Another potent belief held by Mr. Scripps was that the mental capacity and emotional soundness of the average man are sufficient to make him capable of understanding and appreciating the basic truth of science if presented in simple, familiar language.

The almost necessary consequence of these ideas in the mind of so dynamically and financially competent a man as Mr. Scripps was some foundation like Science Service, if only scientific men themselves would do their share in creating and operating it.

The trustees of Science Service, the newspapers served by it and the record of the institution for its five years of life are sufficient testimony of the response of both American newspapers and American science.

In a telegram of condolence President Coolidge said: "He had done much to facilitate the general dissemination of news through his active interest in press associations, and his services in furthering the distribution of scientific and other news of a constructive character were most valuable."

## THE DEPTH OF THE POLAR SEA

THE biggest geographical task awaiting voyagers to sail to the top of the world is to chart the depth of the Polar sea in all directions and to establish roughly the boundaries of the continental shelf. This is the opinion of Fridtjof Nansen, Norwegian scientist and Arctic explorer, who outlines the remaining problems of the Polar region, in the forthcoming April issue of the *Forum*.

The northernmost coast lines of the great continents, as they circle about the polar regions, have been surveyed. There may be islands, large or small, still wait-

ing to be discovered in the Polar seas, but there is no likelihood that a great continuous mass of land has been overlooked by explorers.

What has not been done is to map the northern fringes of the continents which are covered by comparatively shallow water. This under-sea land, known as the continental shelf, often extends far out beyond the visible coast and is a part of the continent itself. The edge of a continental shelf forms a cliff where the sea floor drops to the great ocean depths of several thousand feet.

"From the north of Siberia this continental shelf extends very far, for hundreds of miles," says Dr. Nansen. "Its surface, which is remarkably even, is not very far below sea-level, much of it being less than 150 feet down.

"It was over this remarkably shallow continental shelf that both the *Jeanette* (1879-81) and the *Maud* (1922-24) drifted along their two years' drift routes. Only at one place, namely, north of the New Siberian Island, on *The Fram's* drift route in 1893, has the edge of this shelf been definitely located. At that place it was more than 300 miles north of the Siberian coast. At another point, about midway between the New Siberia Island and Cape Cheljuskin, the Russian expedition of 1913 took a sounding of 1,319 feet without reaching bottom, and it seems probable that they were then at the edge of the shelf.

"North of Canada the continental shelf also extends for a great distance, but exactly how far is entirely unknown. North of Alaska, at Point Barrow and eastward, the edge of the shelf comes very near the coast."

The Norwegian expedition of 1893-6, aboard *The Fram*, discovered that there is a deep ocean basin, with depths ranging from 9,800 to 12,630 feet, in the regions near the North Pole. But how far the deep Polar sea extends and where it is broken by submarine ridges has not yet been investigated.

The importance of also studying the physical conditions of the Arctic wastes is emphasized by Dr. Nansen, who declares that "trying to discover the laws governing the circulation of our atmosphere without a knowledge of the polar regions and their physical conditions is comparable to the action of a man attempting to study the laws by which water circulates in the heating apparatus in a house, without knowing anything about the radiators that emit the heat."

## READING AND EYE MOVEMENTS

CHINESE, oldest of languages, is commonly thought of as the most difficult. But this is an error, if the difficulty of a language is measured by the speed with which it may be read.

Professor Walter R. Miles, of the department of experimental psychology of Leland Stanford University, and Eugene Shan, a graduate student, in a series of comprehensive tests have learned that Chinese may be read more rapidly than English, and that type set vertically

is more efficient and causes less eye strain than type set as is this.

In arriving at these conclusions Dr. Miles made use of eleven Chinese students, all of whom were born in China and were brought up on "vertical newspapers"; that is, on Chinese print reading up and down. He photographed their eyes, measuring their movements and noting how long each rested on a single group of words and calculating from that their speed in reading the two classes of selections.

While the entire eye was illuminated and photographed, it was the cornea, or white of the eye, that presented the opportunity for study. The cornea, being illuminated, changed its angle of reflection during each movement. It was found that the eye is never absolutely still, for when photographing a member fixed on a single spot, its edges left a hazy outline on the negative.

The selections read were in both English and Chinese, taken from a magazine article. The Chinese was set both horizontally and vertically for various experiments. It was found that at each reading pause the eye perceived a greater number of words of vertical type than of horizontal, while a greater number of vertical words were read each second than were horizontal words.

The vertical reading matter, which Dr. Miles found to be more efficient, if applied to newspaper and magazine columns in the United States would bring about this change: You would commence reading at the upper right-hand corner of the column or page and read down, progressing by columns from right to left. Each succeeding letter of a word would be set beneath its predecessor rather than alongside. Punctuation marks to indicate pauses, sentences and paragraphs would be used as at present.

It has been a popular idea of long standing that horizontal reading matter may be perceived and understood with less strain to the eye, and, in fact, many Chinese papers have changed over to this style of type-setting during the last few years. But Dr. Miles's analysis of his investigations indicate this to be an erroneous impression. Investigations subsequent to those he has already reported upon bear out the earlier conclusions.

### PORPHYRIN

A DISEASE that turns the teeth purple and makes sunlight on the skin unbearable was discussed recently by Professor J. Barcroft, the well-known English physiologist, in a lecture before the Royal Institution. The affliction is so rare that there are only three known cases in England at the present time, but it is of especial interest to physiological and medical science because the purple substance, porphyrin, is closely allied to the red material, hemoglobin, that gives blood its color. Subtracting its iron and albumin from hemoglobin by appropriate chemical means leaves porphyrin.

No one knows yet why the bodies of these unfortunate patients should be manufacturing the wrong pigment, Professor Barcroft said, but the fact remains that it is constantly being formed and deposited in their bones, teeth and skin. Porphyrin reacts strongly to the "invis-

ible light," or ultra-violet part of the solar spectrum, so that the victims of this mysterious ailment have to wear gloves constantly, and if they go out of doors in the day time must put on heavy veils.

The only creature that normally wears porphyrin as part of its body-covering is a tropical bird, the touraco, parts of whose feathers are stained a brilliant red with a porphyrin-copper compound known as turacin. This pigment is further remarkable because it seems to be the only normal occurrence of copper as a coloring compound in feathers or skin. Turacin is soluble in weak alkali, so that when it rains and the bird comes into contact with such alkaline solutions as occur frequently in nature, the poor touraco bleaches out.

Although porphyrin is rare as a normal coloring in adult animals, it is the commonest pigment found in eggshells of birds. Almost all the colors of birds' eggs, from the blue of the robin's to the homely brown of the hen's, contain this strange coloring matter.

### ELEMENT 61

PROFESSOR B. S. HOPKINS, of the University of Illinois, has isolated the hitherto unknown element 61 after detailed chemical work extending over several years.

Four hundred pounds of monazite residues, donated by one of the big manufacturers of gas mantles, yielded the new element only after this quantity of rare earth material had been subjected to repeated fractional crystallization. Professor Hopkins found it extremely difficult to separate the new element, illinium, from neodymium, another element, which masked its presence.

From theoretical considerations, physicists and chemists have predicted just what spectral flags, as it were, the new element should fly when it is detected with spectroscope and X-ray. And Professor Hopkins based his claim of discovery on many new lines in the spectrum, prominent bands in the absorption spectrum in the expected position and lines in the X-ray spectrum in the predicted position.

The element is named after the university at which it was discovered and its symbol will be the first two letters of its name, *Il*.

Little practical use for illinium can be predicted as it is just another of a large family of very closely related and much mixed up rare earths. Some of these rare earth elements make up the incandescent part of gas mantles in every-day use, and it is probable that small amounts of illinium are actually contained in such mantles.

Now all but two of the 92 fundamental materials of the universe, the chemical elements, have been discovered. The two still missing are numbered 85 and 87. Efforts to find element number 87, called prenatally ekacaesium, were made at Harvard by Professor T. W. Richards and Dr. E. H. Archibald in 1902 and again by Professor G. P. Baxter in 1915. All these experimenters made successive fractionations of caesium nitrate and other caesium salts. Element 87 is known to belong in the alkaline group along with sodium, potassium and caesium. Later attempts were made by Professor L. M. Dennis

and Dr. R. W. G. Wyckoff at Cornell University in 1919 fractionating caesium alum and caesium perchlorate obtained from the mineral pollucite. In all cases spectrum analysis of the final products of fractionation failed to yield any lines that could not be attributed to elements already known. These final products were also examined for signs of radioactivity with negative results. Likewise in further studies of radioactive decomposition no evidence has been found for an element having the properties of an alkaline metal.

No work reported has been done in an attempt to isolate element 85 which, when discovered, will be in the same group with iodine.

The most recently discovered chemical elements are:

Number	Name	Discoverer	Country	Year
72.....	Hafnium	Coster and Hevesy	Denmark	1923
43.....	Masurium	Noddack	Germany	1925
75.....	Rhenium	Noddack Heyrovsky and Doleyssek	Czecho-Slovakia	1925
	Bohemium			
61.....	Illinium	Hopkins	United States	1926
87.....	Ekacaesium	Undiscovered		
85.....	Unknown	Undiscovered		
	halogen			

There are places for 92 chemical elements in the scheme of things as now conceived by the chemists. All but 87 and 85 have been filled. But some believe that there is a possibility that there may exist elements 93, 94 and 95, heavier than uranium, which is 92. Discovery of 75 is disputed.

### ITEMS

GERMS grow faster when they get their light arranged in a certain way, according to the results of the investigations of two Indian scientists, S. S. Bhatnagar and R. B. Lal, of the University of the Punjab, Lahore, who have just reported to the scientific journal *Nature*. The two experimenters took cultures of the germs of typhoid fever and cholera, and exposed one set to ordinary light, while the second set was placed under a beam of polarized light. Polarized light differs from ordinary illumination in that the fronts of the light waves are all arranged in the same direction, while in ordinary light they criss-cross at all angles. The germs seemed to thrive much better on polarized than on ordinary light. Scientists have been much interested lately in the effects of polarized light on living things, since discoveries made by Dr. Elizabeth S. Semmens, of Bedford College, London, which indicate that the digestion of starch takes place more rapidly under its influence.

THE spread of leprosy in France has been called to the attention of the French Academy of Medicine. A report by Dr. Janselme shows that this terrible disease, usually associated in the public mind with far-off corners of the earth or with times gone by, is threatening modern France. In Paris alone there are at the moment nearly

200 cases of leprosy. These cases may be divided into two classes; the wealthy who can take care of themselves and present little danger of infecting the public, and the poor who do not go to a doctor and find out what is the matter with them till the disease has entered a dangerous stage. As the result of this unexpected communication, the Academy of Medicine resolved to make representations to the government. It was recommended to the government that strict surveillance should be exercised over all lepers, that they should be excluded from schools and from all professions bringing them into contact with the public, that poor lepers should be placed in hospitals or sanitariums and maintained there at public expense, and that a clean bill of health should be demanded from all immigrants or travellers coming from countries where leprosy is prevalent.

FARMERS of the fertile lands along the River Nile have been ordered by royal decree to plant no more than one third of their fields in cotton this year. As in the case of the rubber situation, restriction of the Egyptian cotton crop is expected to maintain high prices. The cotton order permits certain exemptions, but, barring these, if a property owner violates the decree his cotton plants will be uprooted and he will be penalized. It is estimated that the area planted to cotton will be reduced by about 180,000 acres. This is equal to nearly 10 per cent. of the acreage planted each year during the past two years.

WHILE the United States is making efforts to become independent of British-controlled rubber, Great Britain is trying to develop tobacco production in her colonies and thus reduce her dependence on American tobacco. Current figures show that over eighty per cent. of the British tobacco supply comes from the United States, and since popular tests favor this type of tobacco, little headway has so far been made in replacing it with colonial brands. The United States holds an outstanding position in the tobacco industry. Its acreage and production are the largest of any nation in the world, and in recent years it has furnished half the world's exports.

THE latest gold rush—to Red Lake, in northwestern Ontario—continues unabated, and while such modern aids as airplanes are planned for use in the spring, prospectors are now dependent upon the same means of transportation used by the Alaskan gold hunters many years ago, the dog team. Attempts to use snow motors have been unsuccessful, and the dogs have been substituted even though they cost from \$100 to \$200 each, according to information just received by the *Engineering and Mining Journal-Press*. Complete assays are not yet available, it was stated, but apparently the gold is finely disseminated in quartz and schist. The main vein has been opened for a thousand feet, but the width of the mineralized area has not yet been determined. A number of large mining companies have entered the field and a diamond drill outfit has been ordered, but the actual development so far is confined to three properties. The Howey Red Lake Syndicate controls one and a half miles along the mineralized zone.