

THE SCIENCE NEWS-LETTER

A Weekly Summary of Current Science

EDITED BY WATSON DAVIS

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PARAFFIN AND POISON PROTECT WOOD FROM TEREDO

Discovery has been made here of a way to seal poison in wood which promises complete protection for railroad ties, wharf piling, mining and ship timbers against the ravages of land and water creatures like the teredo. Dr. Paul Bartsch, curator of mollusks of the Smithsonian Institution at Washington has found that by forcing hot paraffin containing copper or arsenic salts into timbers under pressure the wood can be preserved from damage by shipworms and other destructive forms of life. The method of application is the same as that now used in treating timber with creosote.

Heretofore it has been found hard to keep preservatives in the wood. Gradually the poisons leached out, and left the timber unprotected. By the use of paraffin, which is resistant to water, acids, and alkalis, Dr. Bartsch claims this leaching can be overcome and the wood protected more effectively and with less expense than by present preservatives.

The Forest Products Laboratory reports that the hot paraffin solutions have a great penetrative power and blocks treated by the new method with iodides of copper and arsenic sealed in have been found by officers at the Key West Naval station to be unaffected by shipworms after three months exposure in infested waters where the untreated wood to which they were attached was promptly attacked.

Dr. Bartsch now has a less-expensive highly-poisonous copper salt and is working to obtain a cheaper arsenic preparation, which he believes will eventually displace present timber preservatives. When the Panama Canal was built the greenheart wood was used in the lock gates on account of it being largely resistant to marine borers. Some difficulty was experienced in getting men to handle the wood, as on some it has an effect similar to that of our poison oak. Recently it has been found that even this toxic timber is attacked by the mollusks which chisel out their homes inside it with impunity. They use the tooth-like edges of their shells.

A colony burrowing through the wood weakens the timber and often results in heavy piling being completely cut in two. Untreated wood shows the holes which the mollusk makes in three months and some creosoted timber after two years in the water has been found to be infested. Copper solutions of one in 2,000,000 have been found deadly, and Dr. Bartsch claims that when the tender tentacles of marine forms come in contact with his preparation they will curl up like the victim of a wood alcohol party. When the ship-worm swallows impregnated sawdust his boring days will be promptly over.

Any number of poisons can probably be effectively kept in the wood by mixing

them in the paraffin. So resistant is paraffin to the effect of acids that bottles are made of it to hold hydrofluoric acid which eats through glass. Heat alone would melt it out, but for railroad ties a paraffin too hard to be affected by the sun's heat would be used.

READING REFERENCE - Determining penetration of wood preservatives. Engineer and Contractor, 57:388. April 26, 1922. Wallis-Taylor, Alexander J. The preservation of wood. N.Y. D. Van Nostrand & Co., 1917.

BLAMES UNSCIENTIFIC FARMING FOR CIVILIZATION'S DOWNFALL

Agricultural limitations probably caused the final break-down of the remarkable Mayan civilization, about 550-650 A.D. and brought about the desertion of many of its magnificent cities, turning into a tropical wilderness a country which formerly supported at least 5,000,000 people, in the opinion of Dr. Sylvanus G. Morley, of the Carnegie Institution of Washington, who recently returned from an exploring expedition in northern Guatemala.

While the Maya race had worked out a system of time measurement which greatly excelled that of the Greeks, Romans, or Egyptians, their methods of farming were very crude, he claims, like those of the modern Indians. The process was to burn off the forest and brush on land selected for cultivation. After one or two crops have been made on this land, they allowed the field to lie fallow, and proceeded to cut and burn and plant another field, and so on until sufficient brush had accumulated on the first field for reburning it.

Repeated burning over of the land causes grasses to come in. In this way, thinks Dr. Morley, the forests were converted into grass lands. Planted crops were choked out. The rapidly multiplying people needed fresh lands and finally moved elsewhere.

Other archaeologists have attributed this apparently sudden break-up to a series of yellow fever epidemics, but Dr. Morley discredits this theory.

HOW DO WE SEE COLORS? PERHAPS THIS WAY.

The mechanism by which the eye sees colors has puzzled scientists. But Dr. Janet Howell Clark of Johns Hopkins University presented to the Optical Society of America today her theory of how the eye transfers the sensation of colored light to the brain. This is it, in essence.

Vision is assumed to be produced by the emission of electrons or tiny particles of negative electricity, from a single light-sensitive substance occurring in both rods and cones. When one colored light falls on rods and cones, electrons are emitted with an average velocity characteristic of the wave-length of the exciting light. The layer of negatively charged electrons and the positively charged cone or rod will form the plates of a condenser, similar to the ordinary electric condenser used in a radio set. When this condenser discharges, a high frequency, alternating current will pass along the nerve to the brain which will be different and specific for each wave length of exciting light. Since each cone is connected directly to the brain through one nerve fiber, whereas several rods are connected through one fiber, the characteristic frequencies reach the brain unchanged only in the case of the cones, so that the cones alone are responsible for color vision.

MAKE STEAM BY ELECTRICITY

The natural order is being reversed in a large plant here, where electricity is being used for generating steam needed for paper manufacturing, instead of the usual process of making electricity from steam. This is possible because locally the price of coal happens to be higher at this plant than the equivalent quantity of electricity.

The work is being done in the plant of the Belgo-Canadian Pulp and Paper Company, which is making steam in a 20,000 kilowatt electric steam generator. The efficiency of the installation is 98 per cent of the theoretical. Thus 60,000 pounds of water are evaporated into steam per hour with apparatus that cost only about \$25,000 to install. This installation cost is very much less than would have been the cost of a coal-burning plant of the same steam capacity, and it is believed that \$4,000 a month is being saved by the new system which replaces one which would require 75 tons of coal per day to operate.

The amount of steam generated and the pressure maintained in the boilers is governed very accurately according to the quantity of steam required in the paper making. This is done very simply, as increasing or decreasing the depth to which the electrodes are immersed in the tanks accomplishes the regulation quickly and accurately.

Such installations are being considered for numerous other plants but they will probably be possible only where very cheap electric power is available from water-power plants. If the saving in initial cost, small space occupied by the boilers, and saving of fuel become important, the chances for this scheme will be good. It is probable, however, that in 999 cases out of 1,000 engineers will still continue to make electricity from steam, instead of using this new process of making steam from electricity.

READING REFERENCE - Muller, Richard. Hydroelectrical engineering: a book for hydraulic and electrical engineers, students and others. N.Y. G. E. Stechert & Co., 1921. Gibson, Arnold H. ed. Hydro-electric engineering. London, Blackie and son., 1921.

DO FLOWERS ATTRACT INSECTS BY INVISIBLE RAYS?

Do flowers use rays not visible to the human eye to attract insects to them? Certain insects can spot ultraviolet light that can not be seen by man and some blossoms, in addition to their ordinary brilliant hues, vary in the kind of short light rays that they emit.

Prof. F. K. Richtmyer of Cornell University told the Optical Society of America meeting at the Bureau of Standards in Washington that these invisible rays may guide pollen bearing insects to the flowers in their search for honey. Giving signals in rays shorter than the deepest violet that we can see brings the flowers the pollen that is necessary to it in producing seed. Experiments made by Prof. Richtmyer on Colorado flowers show that flowers apparently differ in their reflection of ultraviolet as much as in their visible colors.

A small fraction of a gram of tellurium is used in a radio detector, yet the Anaconda Copper Co. has sold over a ton of this rare metal for this use alone.

(A Chat on Science)

THE COST OF NIAGARA

By Dr. Edwin E. Slosson
of Science Service, Washington.

If a man stood on the banks of the Mississippi at the time of the spring freshet, when the stream was carrying down to the Gulf fences, pigs, chickens, furniture, and occasionally, a house, he would be seriously concerned over the loss of the property of those who had so little to lose, and perhaps exert himself to save some of it; but the continuous calamity of Niagara arouses in him no feelings of a nature to mar his enjoyment. He shows the same aesthetic appreciation of a sublime and beautiful spectacle and the same indifference to its cost as Nero at the burning of Rome.

It is easier to comprehend how much it is costing us to keep up Niagara as a spectacle if we put the waste in concrete terms. Various engineers have estimated that it would be possible to get from Niagara Falls over 5,000,000 more horse-power than is now utilized. In one of the large steam plants of New York City the cost of power is \$50 a year per horse-power. Taking these figures as sufficiently close for our purpose, the water that goes over the Falls represents the annihilation of potential wealth at the rate of some \$250,000,000 a year or nearly \$30,000 an hour.

We are told that there are some millions of people in poverty and poorly nourished in this country, yet here is wasted the equivalent of 250,000 loaves of bread an hour. We may see with our mind's eye 600,000 nice fresh eggs dropping over the precipice every hour and making a gigantic omelet in the whirlpool. If calico were continuously pouring from the looms in a stream 4,000 feet wide like Niagara River it would represent the same destruction of property. If a Carnegie Library were held under the spout it would be filled with good books in an hour or two. Or we can imagine a big department store floating down from Lake Erie every day and smashing its varied contents on the rocks 160 feet below. That would be an exceedingly interesting and diverting spectacle, quite as attractive to the crowd as the present, and no more expensive to maintain. Yet some people might object to that on the ground of extravagance who now object to the utilization of the power of the falling water.

It must not be supposed that I am insensible to the beauties of nature or ignore their aesthetic and cultural value. On the contrary, I would wish to enhance the interest and impressiveness of Niagara Falls by making it a rarer spectacle. The reason why people fail to appreciate the beauty of the clouds, of the sunset and of the landscape from their windows is because these are so common. If a bouquet of fireworks were shot off at eight o'clock every night we would not care to look at them. Of course the Falls would be turned on for all legal holidays and as often as there was sufficient demand for it. On such occasions those who wished to go down the current in barrels could enjoy their favorite sport. Weddings would naturally be arranged to come off at a time when the Falls fell. At the hours when the water was prohibited from making a run on the banks, rambles over the eroded rocks and worn channels would be of great interest to the geologist and the tourist. Couples and groups could be photographed at the Falls then, as they are now, by posing them in front of a painted screen.

Many more people would see Niagara and their enjoyment of it would be much greater if it could be seen only on fete days. Thinking they could see it any time, thousands of people have neglected it in favor of some passing show.

Of course, there is something impressive in the thought that the flood pours thundering into the abyss all of the time regardless of sight-seers. But if one has

not sufficient imagination to find an equal emotional value in the contemplation of the varied life and industry it supports as it pours through the penstocks and spins the turbines he can swell with satisfaction on the thought of the millions of years when it was of no use to anybody.

In 1893, when Lord Kelvin stood on the brink of Niagara, he was not so much impressed by its grandeur as he was saddened by the sight of such an enormous waste of power, and he expressed the hope that he would live to see it all utilized, an observation which was much ridiculed at the time by hard-hearted sentimentalists and unimaginative poets. To them Niagara was a mere spectacle, but to the great scientist, who had devoted his life to the study and exposition of the law of the conservation of energy, it was much more. His prophetic eye could see the poor who might be enriched, the homes that could be made happy, the hungry who might be fed, the naked who might be clothed, and the toiling millions who might be relieved of their burdens by the water dashing upon the rocks below for the amusement of idle tourists.

READING REFERENCE - The Niagara book by W. D. Howells, Mark Twain, Prof. N. S. Shaler and others. N.Y. Doubleday, Page & Co., 1901. Edbauer, John. New guide and key to Niagara Falls. Buffalo, N.Y. J. Edbauer, 1920.

BUFFALO DEDICATES \$1,000,000 CHEMICAL LABORATORY

The \$1,000,000 chemical laboratory of the University of Buffalo, Foster Hall, was dedicated Friday, October 27, with addresses by Chancellor-elect Samuel P. Capen, Dr. Edwin E. Slosson of Science Service, Washington, and Dr. Edgar F. Smith of Philadelphia, president of the American Chemical Society.

The laboratory, the gift of O. E. Foster, a Buffalo philanthropist, is designed to meet the special needs of the steel, electro-chemical, dye and hydro-electric industries on the Niagara Frontier, which more and more are relying upon the university trained man for important technical and administrative positions.

In a broad sense, indeed, the erection of this laboratory is in response to the demands of business interests in this section of the country for a home institution that would train students for positions of leadership in the respective industries. The building, erected of solid concrete, is the first of the group to be built for the Greater University of Buffalo on a new 150-acre campus that has been obtained in the northern section of the city.

Dr. Capen, who was installed as chancellor on the day following the dedication, is a specialist in higher education. While engaged in making surveys for the United States department of education, he evolved the technique now generally used to ascertain the vital facts concerning policies, financial administration and educational effectiveness of the institutions considered.

The new chemical laboratory of the University of Buffalo is not the largest but it is considered one of the best and finest equipped of its kind in the world. One large room is so constructed that walls may be added or torn out, according to the requirements of the work under way. It is equipped with metallurgical, industrial, inorganic, organic, analytical, advanced analytical, microscopy and research laboratories, with private laboratories for the professors in charge.

URGES MODERN METHODS TO SAVE COAL WASTE

"Much coal is being lost beyond the possibility of recovery and the time may come when the states will levy a tax on coal which is unnecessarily left in mined out areas." This was the warning of H. Foster Bain, director of the U. S. Bureau of Mines, in an address before the American Iron and Steel Institute here tonight.

Only about half of the coal is obtained by some of the more wasteful methods whereas in well planned mines 90 to 92 per cent is recovered, he said. The application of engineering knowledge during the last twenty-five years has brought great improvement in amount of coal recovered, increase of safety, and decrease of cost. Director Bain emphasized the economy of operating modern mines at maximum capacity and working them out in the shortest time possible.

More extensive introduction of machinery underground is to be anticipated but it will be necessary to change mining methods in order to realize the full economy of machinery. In the early days of mining the three essentials were mining cars, tracks, and ventilating currents. Now electric haulage, motors, mining machinery, loading machinery, and in some instances mechanical conveyor systems are being used. Our mines, said Director Bain, are gradually being converted into vast machine-shops, which require specialists in various mechanical lines to keep the machinery in efficient working condition. The load is being taken off men and put on machines, making the man the supervisor of the machine rather than the substitute for the machine.

From the standpoint of economy of operation, high recovery of coal and the control of conditions that affect safety, Dr. Bain considers the close adherence to a well thought-out plan, adapted to the local conditions, as a first obligation on operators and managers.

NEWS OF THE STARS

Measuring the Milky Way

By Isabel M. Lewis,
of U.S. Naval Observatory,

Is the Milky Way 40,000 or 300,000 light years in diameter? At present there is a division of opinion among astronomers on this question.

The solution of the problem may be said to rest upon a determination of the nature, distribution and distance of spiral nebulae and globular star clusters.

Dr. Harlow Shapley, now director of the Harvard College Observatory, made an extensive study of globular star-clusters a few years ago at Mt. Wilson. As a result of his researches he came to the conclusion that the globular star-clusters are at enormous distances from the Milky Way and, since the sun and its planet earth are in the Milky Way, they are at correspondingly great distances from the earth. The nearest globular star-cluster, he found, was about 21,000 light years from the earth, the most distant 220,000 light years. The nearest globular star-cluster to the plane of the Milky Way was about 5,000 light years distant from it and none were to be found around its borders. The most distant globular cluster was about 200,000 light years from the Milky Way. All globular star-clusters, of which there were not over one hundred in the entire heavens, appeared to be symmetrically distributed in an approximately spherical form with respect to the Milky Way. The center of this system of globular star clusters lay in the Milky Way itself about 50,000 light years from the solar system. There were about as many clusters above the plane of the Milky Way as there were below it. The Milky Way itself, a flattened, discoidal-shaped assemblage of stars, gaseous nebulae and coarse star clusters, was found to be 300,000

light years in extent along its greater axis, according to the results of Dr. Shapley's researches. Its heterogeneous mass of stars, nebulae and clusters resulted, possibly, from the disintegration of globular clusters that had chanced to come within its limits.

The recent discovery on Harvard plates and on a photograph taken by Dr. Land with the 40-inch reflector of the Lowell Observatory of a new globular star-cluster gives even greater dimensions to this system of globular star-clusters, according to Dr. Shapley's estimates. This newly-discovered cluster is in the constellation of Lynx. It is one of the faintest known and also one of the most distant. It has been found to be 165,000 light years from the earth and 200,000 light years from the plane of the Milky Way and the center of the globular system. It is in a part of the sky opposite to that in which most of the globular clusters are found and the distance from this cluster to the most distant cluster in the opposite portion of the heavens is 350,000 light years. This greatly increases the known diameter of the system of globular clusters and the extent of the universe at right angles to the plane of the Milky Way.

The leading opponent of Dr. Shapley's views is probably Dr. Hebert D. Curtis, director of the Allegheny Observatory who has made a special study of spiral nebulae and who favors the more conservative dimensions of 30,000 or 40,000 light years for the Milky Way. Dr. Curtis is a strong supporter of the "island-universe" theory which considers the spiral nebulae as galaxies or island universes similar in form and dimensions to the Milky Way. Spiral nebulae as well as globular star-clusters are known to be external to the Milky Way. There are known to be at least 700,000 of them within the reach of powerful telescopes. Dr. Shapley places them at approximately the same order of distances as the globular star-clusters but according to Dr. Curtis' views the spirals must be, on the average, at least several millions of light years away.

READING REFERENCES - Arrhenius, Svante, A. The destinies of the stars. p. 41-83 Riddle of the Milky Way. N.Y. G.P. Putnam's sons. 1918. Shapley, H. & Curtis H. D. The scale of the universe. National research council Bulletin, v. 2 pt. 3. May, 1921.

FRENCH WORK TO MAKE SAFE AND SPEEDY AUTO

Improvement of small, high-speed cars is the outstanding feature shown in the new designs on exhibit at the seventeenth Salon de l'Automobile at Paris. The greatest effort has been directed to producing six to ten horse-power machines which will give maximum speed with minimum gasoline consumption.

More aluminum is being used in engine construction to decrease bulk and weight, while most cars are now fitted with brakes on all four wheels to secure greater safety. Where a few years ago, the ten horse-power cars could not make over 37 miles an hour, today the machines of the same horse-power with smaller cylinder capacity can make 50 miles an hour. French engineers are aiming to produce a ten horse-power car with the speed and endurance of the thirty-horse-power car of a few years ago.

READING REFERENCES - Ayers, L.P. Automobile industry and its future. Cleveland, Ohio. Cleveland trust Co. 1921. National automobile chamber of commerce. Handbook of automobiles, 1922 ed. N.Y.

GROW NEWSPAPERS AT HOME

Newspapers these days are produced literally by the ton. On the average throughout the year over seven million pounds of newsprint paper are used each day. A large item in the cost of this paper is freight for shipment from the paper mill to the user and hence it has long been desired to make "newsprint" from material locally available in many parts of the country.

A Birmingham, Ala., publisher has demonstrated that it is possible to make such paper from Alabama spruce pine. It has been demonstrated conclusively, too, for a complete issue of one of the daily papers of the city has been printed on paper made from wood of this southern tree.

Of the six million cords of wood ground up for paper pulp each year practically all is consumed in the northern states from Maine to Minnesota, using wood grown in these states or imported from Canada. That other woods are also well suited to paper making, is an important fact.

It is estimated there is enough of the Alabama spruce pine within thirty miles of Birmingham to make 100 tons of paper per day for fifty years; and, of course, within that period there is ample time to grow as much more. So one can well say in that district, and probably in many other parts of the country as well, the supply of paper-making wood could be made practically continuous.

Moreover, most of this forest "second growth" is wood not suited for lumber making. It can, however, be ground up into pulp, treated according to the usual chemical processes with sulphate, sulphite, or soda liquor, then washed and made into paper. This can be done almost as satisfactorily as with wood of the northern states and Canada from which virtually all of the present supply is now drawn.

TO TEACH PAPER MAKING ON PAPER ALREADY MADE

Paper is now being used to teach students how to make paper to be used in teaching students how---. Just how far it will go is not known, but the University of Wisconsin and the Forest Products Laboratory in cooperation with the Wisconsin Board of Vocational Education is giving a correspondence course in the manufacture of wood pulp and paper. The correction of papers and actual teaching will be in the hands of the Forest Products Laboratory and the technical advice of their experts is being made available to the correspondence school students.

READING REFERENCE - Cross, Charles J. A text book of paper making. ed. 5 N.Y. Spon & Chamberlain, 1920. Paper work of Bureau of Standards, Paper 29:12-15, Jan. 18, 1922. West, C. J. Recent advances in pulp and paper. J. Industrial and Engineering Chemistry, 14:858-60. Sept., 1922.

The Agricultural Association of Czechoslovakia is trying to teach the people of that country to eat corn bread. The natives heretofore have regarded corn only fit for hog feeding and distilling.

An earthwork and palisade of palm leaves is being built to save the rich date growing oases of the Djerid of Tunis from the gradual encroachment of the sands of the desert.

STERILIZING MICE BY X-RAYS CAUSES MONSTROUS FORMS

"To hold out hope of applying X-rays as a means of producing temporary sterility in the case of humans is little short of a calamity", declares Dr. C. C. Little of the Department of Genetics of the Carnegie Institution of Washington's experiment station at Cold Spring Harbor, L. I., in discussing an address before the recent Birth Control Congress in London.

Announcement was made at this meeting that results of experiments in checking the reproduction of rats by means of the X-ray had indicated that the offspring of such treated rats were normal.

Dr. Little, who has studied the effect of the X-rays on large numbers of mice, denies this normality and claims that gross abnormalities and monstrosities result later from exposure to X-rays. The first generation, he says, are apparently normal although the litters are slightly smaller. In the second, third, fourth and fifth generations of mice descended from treated mice, but themselves untreated, in addition to 2,000 normal young more than 275 grossly abnormal individuals were produced. Some of these were blind, some had no cranium, others no lower jaw, or no mouths, or distorted and crippled feet and legs. Among approximately 1,200 descendants of untreated mice there was produced only one monster in general dissimilar from the other types.

CONSERVATIVE COURT URGES STERILIZATION TO STOP CRIME

London, Oct. 16.- In passing sentence on an epileptic prisoner, Mr. Justice Roche at the Central Criminal Court declared, "In my judgment, the medical profession of this country would be performing a public service if they studied earnestly the question of the feasibility of sterilizing both men and women with tendencies such as the man before me has. To allow them to produce is breeding from the worst of all stock, and propagating disease and crime. I am expressing no opinion whether it is feasible or whether Parliament should pass such a measure. That depends on the examination of skilled persons as to the feasibility and risks attending."

Commenting on these words of the learned judge, a communication to the London Times says, "May I point out that sterilization by law, although perhaps a novel idea to the insular Briton has been in existence in the other great English-speaking nation for a long time? Fifteen States in the United States enacted sterilization laws before the year 1920."

BLACK DOT BEST TEST FOR SHARP EYES

A plain black dot made exactly large enough to be just visible to the normal eye at twenty feet was recommended to the Optical Society of America meeting in Washington as the best test of acuteness of vision. J. M. McCallie of the Board of Education of Trenton, N. J., said that the simple black dot was superior to various letter tests that are generally used. The dot test has been used for small children, illiterates and those who do not speak English, but it is declared to be superior for literates also.

It is estimated that there were the remains of 100,000 horses in the wall of bones which protected prehistoric men in their rock-shelter found at Solutre, France.

TABLOID BOOK REVIEWS

"THE ROCKEFELLER FOUNDATION ANNUAL REPORT". By the Rockefeller Foundation, 61 Broadway, New York City. 446 pp.

A great world organization for health briefly tells of its work in this report. Actually its activities can not be appraised; concretely, President George E. Vincent, summarized its activities: "The Rockefeller Foundation continued a quarter-million annual appropriation to the School of Hygiene and Public Health of Johns Hopkins University; pledged two million to Harvard for a school of health; contributed to public health training in Czechoslovakia, Brazil, and the United States; aided the Pasteur Institute of Paris to recruit and train personnel; promoted the cause of nurse training in America and Europe; underwrote an experimental pay clinic in the Cornell Medical School; formally opened a complete modern medical school and hospital in Peking; assisted twenty-five other medical centers in China; promised a million dollars for the medical school of Columbia University; contracted to appropriate three and one half millions for the rebuilding and reorganization of the medical school and hospital of the Free University of Brussels; made surveys of medical schools in Japan, China, the Philippines, Indo-China, Straits Settlements, Siam, India, Syria, and Turkey; supplied American and British medical journals to 112 medical libraries on the Continent; supplemented the laboratory equipment and supplies of five medical schools in Central Europe; defrayed the expenses of commissions from Great Britain, Belgium, Serbia, and Brazil; provided 157 fellowships in hygiene, medicine, physics and chemistry, to representatives of eighteen countries; continued a campaign against yellow fever in Mexico, Central and South America; prosecuted demonstrations in the control of malaria in ten states; co-operated in hookworm work in nineteen governmental areas; participated in rural health demonstrations in seventy-seven American counties and in Brazil; neared the goal of transferring French agencies an anti-tuberculosis organization in France; provided experts in medical education and public health for counsel and surveys in many parts of the world, and rendered sundry minor services to governments and voluntary societies. These were done in part by the Foundation directly, but chiefly through its departmental agencies - the International Health Board, the China Medical Board, and the Division of Medical Education.

AFRICAN RADIUM ORE WILL LAST ONLY THREE YEARS

The world must come back to Colorado for its radium. Dr. C. H. Viol, of the Standard Chemical Company's research laboratory, says that the two ounces of this precious element estimated to be the total quantity in the rich mineral deposits of the Belgian Kongo, are only enough to supply the world for about three years. These African radium ores discovered in 1913 have been found to be much richer than the deposits in this country and the cheaper production made possible by this fact has already caused a drop in the market price from \$100,000 a gram to \$70,000 a gram. Unless richer deposits are soon found elsewhere, the world will again be dependent for its supply on the ores in our western States.

Some 22,000,000 pounds of carbon black made from natural gas is used in this country every year in the production of automobile tires.

The strength and elasticity of leather are greater when the air is moist than when it is dry.
