

THE SCIENCE NEWS-LETTER

A Weekly Summary of Current Science

EDITED BY WATSON DAVIS

ISSUED BY
SCIENCE SERVICE

1115 Connecticut Avenue
WASHINGTON, D. C.

EDWIN E. SLOSSON, Director

WATSON DAVIS, Managing Editor



SUBSCRIPTION: \$5 A YEAR, POSTPAID

The News-Letter, which is intended for personal, school or club use, is based on Science Service's Daily Science News Bulletin to subscribing newspapers. For this reason, publication of any portion of the News-Letter is strictly prohibited without express permission.

Vol. II, No. 102

Saturday, March 24, 1923

DR. Edwin E. Slosson

CHATS ON SCIENCE

A DANGEROUS MENTAL MALADY

The progress of mankind has been in all ages greatly retarded and at times altogether prevented by a curious sort of disease of the mind technically known as neophobia. In a case of hydrophobia the mere sight of water is said to arouse disgust, fear and even furious anger. In a case of neophobia the symptoms are similar but the cause is different. The neophobic patient shows marked aversion and resentment at the sight of anything new. The disease is very prevalent and there are no drugs known that will cure it, except poisons. We all seem to carry about the germs of it for any of us is liable to manifest mild symptoms, and in certain countries and certain centuries it has been epidemic.

I came across a striking case of neophobia the other day in a letter written in March, 1825, by Thomas Creevey, when a bill for the construction of the first railroad line was introduced into parliament. This is what he felt about it:

"I have come to the conclusion that our Ferguson is insane. He quite foamed at the mouth with rage in our Railway Committee in support of this infernal nuisance - the loco-motive Monster, carrying eighty tons of goods, and navigated by a tail of smoke and sulphur coming thro' every man's grounds between Manchester and Liverpool. *** Well - this devil of a railway is strangled at last. - Today we had a clear majority in committee in our favour and the promoters of the Bill withdrew it and took their leave of us."

This reminds us of the speech of Sir Charles Napier in the House of Commons when it was proposed to introduce steam power into the navy:

"Mr. Speaker, when we enter Her Majesty's naval service and face the chances of war, we go prepared to be hacked in pieces, to be riddled by bullets or to be blown to bits by shot and shell; but, Mr. Speaker, we do not go prepared to be boiled alive."

The same temper was manifested by the Roman sage, Seneca, when he denounced the waterworks and heating systems that were being introduced into Rome houses and the buildings of several stories that were beginning to appear on the Palatine Hill. "These towering tenements," he said, "are dangerous to the persons who dwell in them." Dangerous to their morals, he meant, of course; not that he was afraid of the buildings falling down. "Believe me", he adds, "that was a happy age before the days of architects, before the days of builders." - "A thatched roof once covered free men; under marble and gold dwells slavery." If he had seen a modern thirty-story skyscraper the Latin language would not have been sufficient to express his emotions.

When it was proposed to use coal gas for lighting, Sir Walter Scott called it "a pestilential innovation" and Napoleon considered it "une grande folie" and Byron satirized it in his verse among the passing fads.

When bathtubs were first installed in the United States in the forties the papers attacked them as extravagant and undemocratic and the doctors denounced them as dangerous to health. As usual, government was called upon to restrict or suppress the novelty by special taxes and licenses. In 1843 Virginia put a tax of \$30 a year on bathtubs and in 1845 a Boston municipal ordinance made such bathing unlawful except on medical advice.

The first printed books had to be sold as manuscripts because of the prejudice against printing. The learned men of Italy sneered at the invention as a barbarous German innovation.

The first shipload of saltpeter sent to England from Chile could not find a buyer and had to be thrown into the sea.

The first bananas shipped to London could not be sold at any price or even given away in the slums but were left to rot because nobody would eat them.

When they were first introduced into England potatoes were denounced as injurious to society and tomatoes as injurious to morality.

All this is history now and so merely amusing. But it may make us stop a minute to consider if we are today opposing some similar innovation from unconscious neophobia.

READING REFERENCE- Sedgwick, W. T., and Tyler, H. W. A short history of science. New York. Macmillan Company, 1917. White, Andrew D. A history of the warfare of science with theology in Christendom. New York, D. Appleton and Co. 1896.

NEW ELEMENT DECLARED MORE PLENTIFUL THAN GOLD

The Danish scientists, Coster and Hevesy, have just announced that there is more Hafnium, the new element they discovered, than gold in the world, yet European scientific discussion still centers around the new chemical element number 72, according to information reaching here. These Danish scientists have examined the material sent them by Dr. Alexander Scott, English chemist, who believed that an unidentified oxide isolated by him several years ago contained the new element. The Danes found that the Englishman's sample does not have in it even a trace of the new element they identified by X-ray spectroscopy.

Dr. Scott now plans to investigate his unknown material in the hope of discovering some other new element, probably similar to titanium.

In the meantime, Drs. G. Urbain and A. Dauvillier of Paris, who about six months ago announced that they had discovered a rare earth that seemed to be element number 72, and who named it "celtium", are urging the correctness of their claims and the possibilities that the Danish scientists are wrong.

But the Danes feel sure that they have discovered the right element to fit into the predicted chemical scheme of things, and while they found no hafnium in Dr. Scott's samples, they report that hafnium appears in great abundance in zirconium

minerals, and they estimate the hafnium content of the earth's crust to be more than one part in 100,000. If this is true, there is more of the new element in the world than of such well-known elements as gold, platinum, silver and selenium. They also announced that Prof. V. Goldschmidt in Christiania has discovered a mineral in which hafnium is the main mineral constituent.

While industrial use of the new element is probably some distance in the future, it has been suggested from its chemical relations that hafnium may prove useful in the manufacture of gas mantles, incandescent filaments, alloys, refractories, glass and other materials in which hafnium's chemical sister, zirconium, is now used.

READING REFERENCE- Rutherford, Sir Ernest. The constitution of matter and the evolution of the elements. Smithsonian Institution, annual report 1915. Washington 1916. Mills, John. Within the Atom. New York, Van Nostrand Company, 1922.

NEW CHEMICAL FATAL TO CLOTHES MOTH

The clothes moth, which it is estimated destroys 10,000 tons of wool each year, may be absolutely controlled by the use of a new chemical called "Eulan F" which may be used in wool-finishing. The substance is harmless to human beings but wool impregnated with it is not eaten by the larvae of the moth except when starvation threatens and it is then speedily fatal. The chemical has been prepared at the dye works of Leverkusen, Germany, by Dr. Meckbach and his collaborators.

Although it is preferably applied to the woolen article during or after the finishing process in the factory it may be added subsequently to the completed goods by soaking them in a cold two per cent solution, or it may be sprayed on. The goods are then rinsed with pure water; and the Eulan finish is then said to be permanent for three or four household washings before needing renewal. A similar process may be used with furs.

The success of the new preparation, which is claimed by its inventors to be complete, comes after many years of experiment. It was noted fifty years ago that wool dyed green was safe from moths and this was later shown to be due to the use of pigment called "Martius Yellow" in the dye. This in turn was shown to cause an acid reaction in the intestines of the caterpillar and to be invariably fatal, the normal reaction of the intestines being alkaline.

It remained then to find a chemical which would have this effect on the caterpillar but be odorless and without effect on the color, or finish of the goods. This, the inventors say, they have done and that tests extending over several years have demonstrated the efficacy of this remedy against this great enemy of the careful housewife, against which the sole protection had previously been a kind of gas attack through the use of strong-smelling chemicals.

Mangoes were first introduced into Jamaica in 1782 from a French ship load of economic plants bound to Hayti which was captured by the English.

France has passed a law whereby all motion-picture films used after June, 1925 must be non-inflammable.

The planet Saturn has a ten hour day instead of a twenty-four hour day like the earth.

YALE TO DEDICATE NEW CHEMICAL LABORATORY

Dedication of the new Sterling Chemical Laboratory at Yale University will be one of the leading events of the four day spring meeting of the American Chemical Society beginning April 4. The ceremonies will take place on the opening day which is the 119th anniversary of the first lecture in chemistry ever given at Yale.

The new building is said to have cost about \$2,000,000 and to be the most complete and thoroughly equipped structure in the world for the teaching of chemistry and for chemical research work. It was built from a part of the memorial fund of \$20,000,000 bequeathed to the University by the late John W. Sterling of the class of '65. It embodies many new ideas in laboratory construction.

Capable of accommodating 3,000 students, and covering a city block in area, it is a striking architectural combination of beauty and utility. The exterior is an example of "collegiate Gothic" architecture, built in the shape of a U enclosing the main laboratory, a one-story building of modern factory construction, invisible from the street. The exterior building will house the offices, libraries, and some classrooms. The whole structure has been described as "a factory in a Gothic shell".

An important feature of the building is the extensive provision made for research work. There are places for 120 workers along original lines; an impressive contrast with the first chemical laboratory at the University in which on April 4, 1804, Benjamin Silliman delivered the first lecture on chemistry to a handful of students. Along the front of the building will be inscribed the names of the most eminent chemists of all time, among whom the only American listed is J. Willard Gibbs of Yale, whose work in physical chemistry published nearly 50 years ago is considered the basis of many industrial processes.

AGRICULTURE BENEFITS WHEN BUG MEETS BUG

Civil War in the insect world is to be further promoted by the U. S. Department of Agriculture in its fight on the gypsy moth, the insect pest which has caused such great damage to trees and other vegetation in New England and neighboring states. S. S. Crossman and Ray T. Webber of the Bureau of Entomology have sailed for Europe to recruit reinforcements for the army of insect enemies of the moth.

In its ancestral European home the gypsy moth was afflicted with hereditary enemies which served to control its numbers. When it was introduced into this country, its enemies stayed behind with the result that the invader had things all its own way for years. Then the Department of Agriculture imported some of these enemies which are parasites preying upon the eggs and caterpillars. These were shown to have an appreciable effect in keeping down the numbers of their enemies and now the Department is sending abroad for reinforcements and also to investigate the possible existence of other similar enemies of the pest of the northeastern states.

If half of the 4,000 eggs laid by a female salmon developed into females and reached maturity in four years, and this rate should continue from generation to generation, in 32 years there would be 256,000,000,000,000,000,000,000 salmon weighing 468 times as much as the earth.

BINDERS FOR THE SCIENCE NEWS-LETTER

In response to a demand from readers of the Science News-Letter we offer subscribers a convenient and inexpensive binder in which the weekly issues of the Science News-Letter can be preserved for library or other use.

Made of substantial gray cardboard, it is necessary only to punch two holes in the News-Letter when received in order to keep the progressing volume in as satisfactory shape as a book.

For 25¢ in coin or stamps a News-Letter binder will be sent postpaid. In quantities of ten or more, 20¢ each, postpaid.

Science Service,
1115 Conn. Ave.,
Washington, D. C.

----- URGE SEA-GOING LABORATORY TO REDUCE OCEAN ACCIDENTS

An experimental ship specially fitted for research in marine physics, is proposed by Dr. L. V. King, of the National Research Council's Committee on Acoustics, as an important step toward the reduction of the yearly toll of lives and property resulting from preventable accidents at sea. The improvement in the design of aerial and submarine sound generators offers a large field for scientific effort, he said, and the first cost of equipment to make such study would be more than repaid by the lives and property saved.

The installation at the Fire Island Light near New York Harbor of synchronous signaling by radio-telegraph and by submarine sound, he cited as an example of the kind of things which could be done. This apparatus sends out a series of dots automatically through the ether and through the water, the intervals between them corresponding to the time taken for sound to travel, say 1,000 feet. The ship operator has his telephone connected to the aerial and to a hydrophone. If he counts the number of dots reaching the apparatus before the first of those traveling by water reaches his hydrophone, he evidently obtains at once the distance from the source, reckoning 1,000 feet per dot. If his ship is also equipped with a wireless direction finder, he knows his exact location and can thus steer a safe course in fog.

READING REFERENCE- Collins, Francis A. Sentinels Along Our Coast. New York. Century Company, 1922.

----- HELIUM TO BE USED FOR NEW AIRSHIPS

A change in the method of operation of the new navy airships, ZR-1 and ZR-3, now approaching completion, is announced by aeronautical experts of the National Advisory Committee and of the Navy Department. Helium will be used instead of hydrogen to hold aloft the big dirigibles which are the first of the rigid type to be used by the United States Government. The original plans called for the use of hydrogen gas.

No change in the construction plans of the dirigibles will be made as none will be needed. The lifting power of helium is nine-tenths that of hydrogen and the difference may be overcome by the carrying of lighter loads. Helium gas has

also two great advantages. It is non-inflammable, reducing to a minimum the danger from fire, and its lifting power does not change with the altitude to the same extent that that of hydrogen does.

Flights to the ends of the earth, the north and south poles, are declared by Uncle Sam's aeronautic experts to be perfectly practicable in the near future. Bases may be established in Alaska and Southern Patagonia, from which points the distance to the nearest pole is declared to be well within the cruising radius of the air ships. Even if the gasoline supplying the power were to run low the ship could still be navigated so long as it maintained its buoyancy by making use of the winds. German Zeppelin pilots during the war were adept at such methods.

One of the big dirigibles is being built in Germany as part of German payment of claims of this government growing out of the war, and will be navigated to this country with a German crew. The first landing is expected to be Chicago. The other "ship" is being constructed at Lakehurst, N. J.

READING REFERENCE- Abbot, Charles Greeley. The discovery of helium and what came of it. Smithsonian Institution, annual report 1918. Washington, 1920. Rogers, Gaillard Sherburne. Helium bearing natural gas. Washington, Government printing office, 1921.

VIRGINIA OBSERVATORY DETERMINES STAR MOTIONS

The astronomical observatory of the University of Virginia has been selected by one of the foremost astronomers of Europe as the place in which to carry on extensive researches on the motion of the stars and the direction of the sun's motion through the heavens. P. Van de Kamp recently arrived here from the observatory of the great Dutch astronomer, Kapetyn, of Groningen, Holland, will work with Dr. Harold L. Allen of the staff of the Leander McCormick observatory.

The 26 inch telescope of the observatory possesses the largest lens in the eastern states and the object glass is the work of the famous lens maker, Alvan G. Clark, who pronounced it his masterpiece. It is celebrated for its refinement of definition. The observatory has been carrying on the work of star measurement for the past eight years and in that time has calculated the distance of over 500 stars.

Photographs of the stars are taken from opposite sides of the earth's orbit and from their relative positions in the sky their distances are figured on the same principle that a range-finder employs. An extreme refinement of measurement is necessary, the required degree of accuracy in the measurement of the position of the star on the photographs being one two hundred and fifty thousandth part of an inch. Results do not depend on any one set of observations but on a series taken over a number of years.

"The astronomer finds the distance to a star in precisely the same manner as that employed by an engineer who is desirous of determining the width of a river which cannot be crossed," explained Dr. S. A. Mitchell, director. "The engineer first measures a base-line on his side of the river using the accuracy necessary for the purpose and then he chooses some well-defined object like a church spire on the other side and measures the angles from each end of the line. He is then furnished with one side and two angles of a plane triangle, and the solution is one which any intelligent high-school boy could accomplish.

"The only possible base-line available to the astronomer for determining the distances of the stars is the diameter of the earth's orbit. Although this distance represents a very great number of miles, 186,000,000, it is none the less pitifully small when compared with the enormous distance to even the nearest of the fixed stars. However, it is the largest distance possible for the astronomer, and although small he must make the best use of it possible. By means of about twenty photographs spread over an interval of two years there is sufficient material furnished to give the precision desired for determining the distance of a star.

"Since beginning on this work about eight years ago the Leander McCormick Observatory has determined the distances of over five hundred stars, while in the first seventy years of work in determining stellar distances, or parallaxes as they are technically called, the accurate parallaxes of one hundred stars only were determined. By means of photography with a large telescope it is possible to do the work more expeditiously and more accurately than in the earlier days."

READING REFERENCE- Lewis, Isabel M. Splendors of the Sky. Duffield and Company, 1920. Hale, George Ellery. The New Heavens. New York. Charles Scribner's Sons, 1922.

WOULD LIGHT TUT'S TREASURES TO PRESERVE TOMB COLORS

To preserve the rich trappings of Pharaoh Tutankhamen from fading from their former glory, scientists in London propose that the ancient objects be entirely illumined with modern artificial light. Recent experiments made in England indicate that museum materials retain their colors longer when electrically lighted than when exposed to any form of nature's daylight.

Daylight contains damaging ultra-violet rays which are not so strong in most artificial lights. The best glass, they say, for use in cutting out these undesirable rays has a distinct yellow color which makes it scarcely practical for exhibiting purposes. However, any kind of tinted glass merely delays fading but does not stop it.

Direct sunlight has been known to cause rapid fading, but these scientific experiments indicated that the diffused daylight for which modern museums are designed is six times as injurious as electric light.

Perceptible change of color in the wings of specimens of certain moths were found in from ten to twenty-one days, in the fur of a tiger after 175 days and in the coat of a brown horse and antelope after 1485 days.

The velocity of a golf ball as it leaves the driver of a good player is about 200 feet a second or 135 miles an hour.

If the 1,700,000,000 people who make up the world's total population were formed into one person, such a being would be four thousand feet tall.

One of the best research libraries in Poland is being erected at Torun, the home town of Copernicus, in celebration of the 450th anniversary of the birth of that great Polish astronomer.

FINDS GLUCOSE DANGEROUS AS AUTO ANTI-FREEZE MIXTURE

Glucose is more dangerous than wood alcohol - as an anti-freeze mixture for cooling automobile engines. The U. S. Bureau of Standards has investigated the recently reported value of the sweet compound when used to prevent radiator freeze-ups and found that the autoist runs a big risk in using glucose. Solutions of wood or denatured alcohol, the experts declared, seem most desirable for cold weather protection.

"Any strength of glucose solution which can be made will freeze, and freeze solid, at a temperature but very few degrees below the freezing point of water," a statement by Bureau experts says. Although it will probably prevent the bursting of the radiator, it will not protect against the other serious effects resulting from a freeze.

"In glucose solutions the process of freezing is gradual, a slush forming which thickens continually as heat is abstracted, becoming a hard whitish mass streaked with veins, so that a tube of the frozen material looks very much like a stick of lemon candy," the experts found. "Evidence is strong that under radiator conditions the slush stage may be relied upon to continue beyond the period of marked volume changes incident to freezing, whence there will be no confined pressures and so no danger from bursting. But bursting is not the only damage inflicted upon an automobile engine cooling system by a freeze up. Total stoppage of the water circulation may have serious effects upon the pump if there be one in the water line, and the engine is likely to overheat severely shortly after starting, the consequent formation of steam at considerable pressure blowing out gaskets and connections. The question which confronts an automobilist in regard to the use of glucose in his radiator is therefore whether or not the exposure to cold weather will be long enough to freeze his solution to a thick enough slush to threaten dangers from the stoppage of circulation."

For all practical purposes the freezing point of any strength solution of glucose which could be employed would lie between 25 degrees Fahrenheit and 30 degrees Fahrenheit, the experts determined. Furthermore, it would be frozen absolutely hard and solid at such a temperature, given time enough to extract the latent heat which must be abstracted to freeze a substance. These facts are reconciled with the successful use of glucose solutions in automobile radiators exposed to very cold weather, weather often below zero Fahrenheit because of the time factor involved.

"The freezing of the liquid in an automobile radiator is a very slow process under ordinary conditions because these are usually not such as to abstract heat very rapidly and the latent heat of freezing of water is very large," the report said. "After cooling a given quantity of water to 32 degrees Fahrenheit, there must be a further extraction of heat from it, in order to secure a like mass of ice at 32 degrees Fahrenheit, just as much heat as the water gave up in cooling from 175 degrees Fahrenheit to 32 degrees Fahrenheit.

"With an automobile standing still and its fan not running, nor any wind blowing, the air circulating around the radiator surface from natural convection and occasional puffs of breeze will not abstract heat at any very rapid rate even though the weather be as much as 20 degrees or 30 degrees colder than the radiator. Accordingly with slush formation providing protection from bursting during the early stages of freezing, it is highly probable that many hours of exposure to quite cold weather may be withstood safely. On the other hand, let the exposure

be unduly prolonged, or let wind conditions be such as to accelerate the cooling many fold, and a solution of glucose will freeze solid in a radiator in a temperature fairly close to the normal freezing point of water.

"Granting that inconvenience is certain and damage likely to ensue from total stoppage of the circulation system, a conservative automobilist will deem it an unnecessary risk to employ a radiator fluid that is known to freeze solid at 25 degrees Fahrenheit even though it is unlikely that the weather conditions will be such as to freeze more than a small fraction of it into slush in the time interval available.

"perhaps the principal danger in using a glucose solution lurks in the total uncertainty as to degree of protection, in marked contrast to the absolute certainty of behavior of an alcohol water mixture of the usual composition. A false sense of security is a most potent source of disaster.

"It is, of course, true also that in the use of alcohol-water solutions, the same conditions as described for glucose may occur if the alcohol be permitted to become too dilute. But it is perfectly easy to secure conveniently any desired lowering of the initial freezing point down to as low as minus 20 degrees Fahrenheit by simply using enough alcohol, whereas with glucose no strength of stable solution exists which will not begin to show solid crystals at plus 23 degrees Fahrenheit."

PLANTS AND ANIMALS LIVE ON EVEREST'S HEIGHTS

Although the 1922 British Expedition to Mount Everest failed in its principal aim, which was to reach the top of the highest mountain in the world, it did succeed in finding out a number of things of much interest to scientific men. These things are now being made known in various scientific journals.

Certain brave little plants, such as edelweiss, were found blossoming at a height of nearly 20,000 feet. Wild animals and birds, such as mountain sheep, ravens and rock doves, unacquainted with human beings, showed no fear of them at all, readily eating from the climbers' hands. These wild sheep, ravens and doves, together with wolves, foxes, rabbits, rats, mice and condors, with a few other birds, were found at an altitude as high as 20,000 feet and occasionally even a thousand or more feet higher. Condors were observed flying high above the mountain's north summit, 24,000 feet above sea level, where the atmosphere was only one-third as dense as at sea level.

Some naturalists have proposed the theory that life on the earth must have begun first on mountain summits, for these summits might be considered as the first parts of the earth to be cool enough for the existence of living things. Geologists point out, however, that many of our highest mountains were formed since those earlier geological epochs in the rocks of which plant and animal foods have been found.

READING REFERENCE- Hardy, Marcel E. The Geography of Plants. Oxford. Clarendon Press, 1920. Howard-Bury, Charles Kenneth. Mount Everest, the reconnaissance, London. E. Arnold and Company, 1922.

OIL SHALE TO RESCUE DWINDLING OIL RESOURCES

Petroleum production in the United States and Canada is at its peak and probably within three years will begin to decline, Dr. Ralph H. McKee, professor of chemical engineering of Columbia University, declared before the recent joint meeting of the Providence Engineering Society and Chemical Society. The oil shale formations of the west may furnish much of the future supply, he asserted.

"Prospect of increased supply of petroleum from wells on this continent is nil", continued Prof. McKee. "Production is approximately at its peak. In the past, as at present, the United States furnished approximately two-thirds of the world's production, but we are consuming more than we are producing."

Describing American oil resources as shown by recent developments, Prof. McKee stated, "Oil shales vary not only in yield of oil per ton of shale, but also in type of oil, type and character of minor constituents. Shales are worked in Scotland which yield but 20-22 gallons of oil per ton of shale mined. Large deposits of shales in this country give a much higher yield; the largest of these are the Green River shales of Colorado, Utah and Wyoming.

"There also are large deposits in Nevada, California, Kentucky, Indiana, Ohio, New Brunswick and Nova Scotia, and smaller deposits, though large enough for commercial exploitation, in many other portions of this continent. There are similar deposits in other parts of the world.

"It is not commonly appreciated how large these oil shale deposits are. If we consider only those oil shales which will furnish a barrel, or forty-two gallons, or better, of petroleum per ton of shale, we have in the Green River section alone, in known deposits, sufficient to furnish 64 thousand million barrels of petroleum, which amount to eight times larger than the total of the well petroleum that this country has produced.

"A shale oil plant, to be successful, must be able to handle cheaply and efficiently large quantities of oil shale, distilling it to get the crude oil and ammonia and then crack and refine the crude oil to get a commercial gasoline."

"It is only within the last five years that serious attention has been given to the question of the development of a proper type of retorting still for oil shales. We have no reason to think but that in less than five years we will have succeeded in obtaining a retorting scheme which can handle American oil shales efficiently and economically."

The demands for petroleum are increasing in this country at the rate of about 50 million barrels a year, according to Dr. McKee. We have reason to look forward to the utilization of oil shale as a chemical manufacturing industry which will rank with our largest industries in its labor and capital requirements and in value of output.

Much of the gasoline sold today is a mixture of cracked gasoline of 40 per cent unsaturated content with straight distillate gasoline of low unsaturated content," continued Prof. McKee. "In New York it is not uncommon to have put in one's car a gasoline carrying 20 per cent of unsaturated constituents, which means that such gasoline on standing and in contact with air, discolors and separates, after a time, a small amount of brown tar-like deposit. The automobile of a few years ago would not run on present day gasoline. With the certain increase in the content of unsaturated compounds, we must look to the automobile engine designer to keep up with the changes in the type of fuel available."

READING REFERENCE- Alderson, Victor Clifton. The oil shale industry. New York. Frederick A. Stokes Company, 1920. McKee, Ralph H. Shale Oil. New York, The Chemical Catalog Company, Inc. 1922.

MAKE OYSTERS TAKE BATH BEFORE GOING TO MARKET

Oysters can now wash themselves clean before they go to the table. The successful establishment on a commercial basis of the process by which the bivalvular delicacies which may have been raised in polluted waters are rendered sanitary has been announced by the Conservation Commission of New York, working in cooperation with the U. S. Bureau of Chemistry and the U. S. Public Health Service. It provides a series of baths, which sterilize the outside of the mollusk and allow it to free itself of any infected material in its shell or body cavities by natural processes. The edible portion of the oyster is not exposed to the action of any chemical. The animal, in a perfectly natural manner, washes itself clean in sterile water.

The oysters are placed in a clean empty basin so arranged that the water can freely circulate about them. The water is treated with chlorine and the shellfish allowed to drink for six hours. The basin is twice drained and filled, giving the oysters two more drinking periods.

Severe restrictions as to the quality of the water used, the degree of pollution of the oysters which may be subjected to the process and the qualifications of the responsible operator are imposed by the Commission. As the meat of the oyster is not touched by chemicals, a stronger dose of chlorine can be used than is possible in sterilizing drinking water. It is claimed that this process is more thorough and more effective than any to which other foods are subjected, except those which are completely sterilized as in certain canning processes.

TABLOID BOOK REVIEW

THE VALLEY OF TEN THOUSAND SMOKES. By Robert F. Griggs, Ph. D. The National Geographic Society, 1922. Pp. xii; 341.

This is an authoritative account of the eruption of Mt. Katmai in Alaska in 1912, the greatest volcanic eruption of modern times; and of the results of the National Geographic Society's exploration of the devastated region in the years following the cataclysm. Dr. Griggs was the leader of these expeditions. The book takes its name from that given by Dr. Griggs to the valley inland from Mt. Katmai where as a result of the eruption 50 square miles of land is underlaid with molted lava and broken in thousands of places with fissures and fumaroles through which hot gases are continually escaping.

The book is illustrated with maps and 233 illustrations including a number of reproductions of color photographs. It is interestingly written and a valuable addition to the library of anyone interested in the study of those forces of Nature whose extent and power we so little appreciate.

A lichen is composed of two distinct and utterly unlike living organisms.

The early spring plant, popularly known as "Dutchman's breeches", is highly poisonous and has been held responsible for the death of a number of cattle.

Fox farmers in Alaska report that eagles prey extensively on the pups of blue foxes.

A model electrical farm to encourage the use of electricity in agriculture is being established near Stockholm, Sweden.

It is the custom of French fishing vessels to inform their owners by radio on the completion of a catch.