SCIENCE NEWS-LETTER

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BIG ERUPTION OF VESUVIUS DUE SOON, GEOLOGIST BELIEVES

Washington. Vesuvius, Italy's famous volcano, may soon break out into a great eruption, if Dr. H. S. Washington, geologist and volcanologist, of the Geophysical Laboratory of the Carnegie Institution of Washington, is right in his belief as to its present condition.

Dr. Washington is leaving the United States about April 1 to attend the meeting of the International Geophysical Union in Rome and he hopes to arrive in Italy before the activity of the volcano commences. Just how soon the ancient volcano will let loose its energy, Dr. Washington does not attempt to predict, but he thinks that it will probably be soon, perhaps a month, perhaps a year. He hopes, however, that it will occur while he is in Italy, as studying volcanoes has been his life work.

After the last great eruption of Vesuvius in April, 1906, the volcano was quiescent until the fall of 1913. In the spring of 1914, Dr. Washington went down to the crater floor and made an inspection. Then smoke was issuing from a hole in the bottom of the crater. Shortly after this, lava began to flow out from this hole into the crater and when Dr. Washington saw Vesuvius again in 1919 it was about two-thirds full of lava with a small cone, 200 to 300 feet high, formed directly above the hole through which the lava issued. Now the lava has reached nearly to the edge of the crater, and something is due to happen.

It is impossible to predict whether the lava will overflow the crater rim, as rarely happens, or whether it will break through the lower slopes of the volcano through the hydrostatic pressure of the high column of lava. This happened in 1906, although the outlet was rather high up, and the eruption was accompanied by tremendous explosions and the emission of vast quantities of ash. Some 20,000,000 or more

cubic yards of lava poured down the side of Vesuvius, partially covering one town, and ashes covered the surrounding country for many miles around.

The recent disturbances of Vesuvius reported in the dispatches from Rome are in themselves unimportant, Dr. Washington says, and are probably caused by the small cone inside the crater falling in. However, they indicate the probability of a large eruption in the near future.

Stromboli, the island volcano, off the coast of Italy, known as the "Lighthouse of the Mediterranean" because of its frequent activity is now more eruptive than usual. Homer in 1200 B.C. sang of this volcano. There is no connection between Vesuvius and Stromboli, Dr. Washington declares. Mount Etna, the third great Italian volcano on the Island of Sicily is now quiet.

FOURTEEN PREVIOUS ERUPTIONS
OF MT. VESUVIUS

For use when Vesuvius erupts.

Up to this time there have been fourteen great paroxysmal eruptions of Mt. Vesuvius. This number does not by any means take into account all the outbursts in which this volcano has indulged. Vesuvius is rarely completely quiet. But the fourteen mentioned have been of a spectacular nature, and have usually been disastrous for the people living near by who, in spite of the danger, have always been tempted to live upon this mountain's very fertile slopes.

Only eight miles from Vesuvius is Naples, home of 697,000 people and Italy's largest city. Near it are the towns of Torre de Greco, Resina, Portici, all three near the site of ill-fated Herculaneum of ancient days, St. Giorgio, St. Sebastiano, Massa di Somma, St. Anastasia, Somma, Atlajano, Caposecchi, Bosco Reale, Bosco Tre Case, Torre dell Annunziata, and Angri. Eight miles south of Vesuvius is Castellamare a city of some 33,000, nearly on the site of Stabiae, destroyed at the time of Pompeii's disaster in 79 A.D.

Mount Vesuvius consists of two distinct parts, of which the northern part in the remains from the prehistoric crater rim, while the other part is the present active cone. The general height of the mountain is about 4000 feet, but varies with each period of activity. It is believed that the mountain was once twice as high as at present, the whole mountain towering over the site of the active small cone. It is possible that at some prehistoric time a single mighty explosion blew off the entire upper part of the cone, leaving the crater whose outline is still

traceable in the crescent of Monte Somma.

From the earliest times of which we have a record, this great volcano lay in quiescent state, and only such a man as the geographer Strabo, who had grown up at the foot of the Sicilian volcano, Etna, recognized it as of volcanic origin. Yet the ancient legend of the Romans that the gods had once used the Campania where Vesuvius is situated as a battle ground and fought by hurling huge rocks at one another gives us the right to surmise that men had once long before written records seen this mountain in explosive activity.

The first eruption of this volcano within historic times occurred on August 24, 79 A.D. It was a shower of ashes of this eruption which buried the city of Pompeii, and the same substance, mixed with the water which condensed from the steam given off by the volcano, buried the city of Herculaneum in viscous mud. Fluid lava was not given off by Vesuvius until the eruption of the year 1036.

The striking events in the history of Vesuvius after its renewal of activity begin with a great flow of lava in 1631 in which 18,000 persons lost their lives. In 1676 a perpendicular column of lava is said to have been thrown up. Another such column was seen in 1779. During the last half of the seventeenth century Mt. Vesuvius was fairly quiet, but mild outbreaks were frequent during the first half of the next century, culminating in a large lava flow in 1737. After a period of less activity, another explosive eruption took place in 1760, and on December 23 of that year a new crater opened on the side of the mountain. After that activity practically never ceased, and on June 15, 1794 a great lava flow inflicted great injury on Torre del Greco. In 1822 another violent outburst threw out great volumes of ash and vapor, and 800 feet of the cone was blown away. Long continued, though minor, activity continued then until the eruption of 1872. This outbreak was somewhat different from others in the large number of subsidiary openings around the sides and base of the crater, through which ashes and projectiles, and, finally, lava were emitted. Professor Palmieri, who studied this eruption, describes Vesuvius as "sweating fire". It was at this time that a party of sightseers was caught by the sudden rush of lava from one of these exterior vents, and practically wiped out. The last eruption of considerable size occurred in 1906. The material was thrown out of the topo of the main crater. A stream of lava flowed down the side of the mountain, and partially obliterated a town, and ashes covered everything to a great distance.

STRIKE WILL STOP POWER
EQUAL 400 NIAGARAS

Washington. Power at least equal to four hundred times the energy actually developed at Niagara Falls will be shut off if all 600,000 coal miners ordered to strike April 1 carry out their strike orders.

Engineers of the U. S. Bureau of Mines state that each coal miner produces enough coal to be equal to several hundred horse power. This rate of energy production from all of the 600,000 miners affected by the strike orders would equal 250,000,000 horse power. In spite of the fact that the coal miner does not produce coal twenty-four hours a day, 365 days a year, and Niagara is quite capable of continuous power production without appreciable extra expense to any one, there is still a large margin for these coal producers in comparison with the water power plants of the country.

Manufacturing establishments in the United States have about 30,000,000 horse power installed to serve them. Mines and quarries, public utility steam plants, and water power developments throughout the country each have seven or eight million horse power more. The horse power of the locomotives, including both steam and electric, on our railway systems represent even greater power equipment. However, practically all of these depend upon the coal from the bituminous coal mines of the country.

It would take at least ten times as much fuel oil as has ever been supplied in the United States to be equivalent to the coal fuel used. The natural gas which can be burned for power production is even smaller in comparison, and manufactured gas or other fuels are negligible. The coal production of the country forms not only the backbone, but also most of the trunk, arms, and legs of the power body.

Between 500,000,000 and 650,000,000 tons of coal are produced in the United States per year, depending upon how active business conditions of the country are. About 90,000,000 tons of this total is anthracite which is used almost altogether as domestic fuel. The rest is bituminous coal which represents the source of energy used by the railways and the industries. About 350,000,000 tons of the annual production is burned to make steam for power to turn the wheels of industry.

If all of the miners affected by the strike orders cease work this will, of course, not stop all coal production, for it is estimated that only about seventy-two per cent of the bituminous coal in the United States is produced in union fields.

Moreover, there are large stocks of coal now on hand, both with dealers and in the stock piles of railways, public utilities, and industrial establishments. One semi-official estimate indicates that the maximum interruption which can be caused by such strike would reduce the coal supply per week three or four million tons below the current demand. There is perhaps forty to fifty million tons of coal in storage from which this deficit could be made up. Moreover, there is some possibility that the present production of non-union fields may be speeded up by the increase of demand which would follow a strike. However, even the most comforting of such estimates makes it clear that after a few weeks the wheels of industry will have to slow down if the bituminous coal miners should continue an interruption of fuel supply for a long time.

FELLOWSHIPS TOTALING $100,000
ESTABLISHED IN MEDICINE

Washington, About thirty men or women, professionally trained along medical lines will each year have a chance to become thoroughly qualified teachers in medicine through the establishment of fellowships in medicine administered by the National Research Council.

A recent survey made by the Division of medical sciences of the National Research Council revealed the need of teachers in the scientific branches of medicine and in laboratories. Medically trained men and women are being attracted by the financial opportunities in the clinical and diagnostic branches, and the study of anatomy, physiology, and physiological chemistry does not appeal to them.

The Rockefeller Foundation and the General Education Board have made appropriations totaling $100,000 annually available for a period of five years for the fellowships, which are expected to build up a large body of men and women who are fitted to become professors in the scientific and research subjects in medical schools.

To qualify for appointment as a fellow, a candidate must have the degree of Doctor of Medicine or Doctor of Philosophy, it has been announced. Fellows will be at liberty to choose the institutions or universities in which they will work, as well as the men under whose direction they will carry on their researches. During their fellowship they will be required to gain some experience in teaching, as well as do some creative work. Appointments will usually be made for a year and the stipends are not definitely fixed in amount, but are intended to enable the individual to live comfortably while carrying on his special work as fellow.

BROADCASTS

Radio News of the Week

"WIRED WIRELESS" ON ELECTRICAL WIRES
INCREASES RADIO CHANNELS

Washington. Another medium for radio broadcasting is added to that of the ether by the application of "wired wireless" to electric lighting circuits which has been perfected and demonstrated by Maj. Gen. George O. Squier, chief signal officer of the Signal Corpos of the U. S. Army. In effect, the channels of radio communication are greatly increased in number.

The same wires that bring the electric current for lighting and heating to the homewill in the future also bring the radio impulses that will carry infromation, music, sermons, speeches, and entertainment of all sorts. By the simple proceedure of plugging in a lamp cord, the receiving set is connected. No antenna is needed.

The principle is very simple and is exactly the same as that used today in sending many telephone and telegraph messages over the same wire. General Squier invented and explained multiplex telegraphy, telephony and radio in 1910.

Instead of transmitting the radio impulses into the ether broadcast, in the new system the sending is done into the lighting circuit. Only a very small amount of power is used. Where the ordinary radio uses kilowatts, the new device will use only watts. There are no interfering radiations given off by the lighting wire systems that would conflict with radio broadcasting as we now know it. The frequencies used, however, are about intermediate between the radio frequencies and those used in telephone work, because of engineering difficulties.

"All the hotels in the feity will use the same orchestra; there will need to be only one church service to reach all of a given denomination." These are predictions made by General Squier.

It is likely that this new application will solve the problem of toll broadcasting, as the electric public utility companies have control of their wire systems and will be able to control and charge for "wired wireless" broadcasting service.

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STUDENTS UP EARLY
TO USE RADIO

Seattle, Wash. Students of the University of Washington here are putting in an hour of early morning radio in order to operate their end of a collegiate news service between Pacific coast colleges. Heavy other traffic during the day and broadcasting at night forced them to send and receive between four and five A.M.

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RADIO SUBMARINE CABLE TO
PROTECT SHIPS AT HAVRE

Washington. Radio submarine cables of the Loth type will soon be installed in the port of Havre, France, to guide incoming and outgoing vessels in that harbor during foggy weather, according to information received through the consular service. High-frequency current is used to electrically charge the cable on the ocean's floor and the pilot of the ship is able to steer by the hum produced in receiving apparatus on board ship.

The Havre Chamber of Commerce has recently equipped its life-saving and signalling service at this port with a powerful wireless telegraph and telephone plant. This supplements the old fashioned method of flag signalling which can not be seen when the wind does not keep the flags from drooping.

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UNCLE SAM ISSUES
BOOK ON RADIO

Washington, Uncle Sam has just issued an elementary book on radio communication, prepared by the experts of the Bureau of Standards and issued by the Signal Corps of the Army. The cost is $1.00 and it can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C., at this price.

The book is entitled "The Principles Underlying Radio Communication" and known as Signal Corps Radio Communication Pamphlet No. 40, Second Edition. The first edition was prepared during the war for use as a textbook in training enlisted men of the Signal Corps for radio service.

In revising the book new material on batteries, ordinary wire telegraphy and telephony, line radio communication, transformers, antennas including coil antennas and direction finders, transmitting apparatus, particularly arc converters, electron tubes and electron tube apparatus, a.c. plate supply, and radio telephony was added. Numerous circuit diagrams are given, and the construction of antennas and ground connections is described. Besides other useful practical information, the book contains a table of dielectric constants, copper wire tables, wave length tables, the International Code, safety precautions for radio stations, information regarding radio laws and regulations, and a list of radio publications including those issued by the Government. It contains over 600 pages and more than 300 illustrations, many of them photographs.

SCIENCE OF GROWING THINGS

Agriculture News of the Week

WILD GAME ON
FARM SOURCE OF PROFIT

Washington. The rabbits, quail, pheasants, wild turkeys and ducks that live in the wood lot and on the farm are not usually considered to be of great value, but Dr. T. S. Palmer, expert in game conservation, of the U. S. Biological Survey, after an investigation of the nations's game resources believes that wild life can be made profitable not alone for food and pleasure, but for direct revenue as well.

"Under favorable conditions the game on the farm may be greatly increased and even produced artificially, though as yet game farming has made only a beginning in the United States," he says. "Pheasants and pheasant eggs have been distributed in certain States and in some cases the persons receiving them have been successful in rearing the birds, but comparatively little concerted effort has been made by farmers to raise any large number of pheasants, either in cooperation with game departments or for supplying the market. Pheasants, wild turkeys, mallard ducks, black mallards, and wood ducks can be reared on farms, and, commanding higher prices than poultry, might be made even more profitable."

Another method of utilizing the game on the farm and of making it render a direct return is to sell or lease the shooting rights. Farms are very generally posted, but owners and tenants do not as a rule attempt to obtain a direct return by leasing the hunting privileges. How valuable these may be under favorable circumstances is shown by the experience of one county in North Carolina, where the cooperative leasing of quail hunting privileges was made to pay most of the taxes on the farms. Individual landowners who have quail or other birds on their holdings may obtain a substantial income by allowing sportsmen the privilege of hunting on their property and in addition by furnishing them teams, hunting dogs, and the assistance of boys for locating the game, and by providing accommodations for sportsmen from a distance.

Nearly every farm produces some game which may be hunted in open season, as rabbits, quail, squirrels, or other species, and this has a certain food or recreational value. Upland game birds are often of more use as destroyers of weed seeds or noxious insects than they are as food. One out of sixteen persons in this country hunts game of some kind, Dr. Palmer estimates. Under normal conditions in this country probably more than 6,000,000 persons engage in hunting during the open seaso

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BEES COUNT THEMSELVES
LIKE TELEPHONE MESSAGES

Washington. A traffic census of bees coming home from work is being taken by scientists of the Bureau of Entomology. A gate is provided that works on the one-way street principle and only one bee can enter the hive at a time. The apiculturists keep tab on the bees by the same device that is used by the telephone company in keeping track of the number of times a subscriber used his telephone. As the number of entrances made by the bees is something like 300,000 a day, the Bureau of Standards experts who constructed the counting device had to provide a special source of electric current to operate the apparatus.

WATCH TIRE MANUFACTURE
THROUGH X-RAY MACHINE

Birmingham, England. X-ray photographs of canvas used in tire manufacture by one of the large rubber tire companies here are being used to reveal whether the threads are over-stressed during the process. Every twentieth thread is impregnated with a lead salt that is opaque to X-rays, and a photographic film fastened inside of the tire during the manufacture recorded the warping of the squares of treated threads.

PLATINUM DISCOVERED
IN BRAZILIAN STATE

Washington. - Platinum has been discovered in Brazil, according to information reaching the Department of Commerce. The deposit is in the state of Parahyba do Norte and is on a mountain ridge three miles from the main automobile road leading from Campina Grande to Patos. Regular truck lines now operate over this line, and it is understood that a branch road from the main line to the deposit could be easily constructed. For the present the owner proposes to establish an extracting plant at the deposit and bring the ore out by truck.

FREE GUIDES TO NATURE OF YOSEMITE NATIONAL PARK

Berkeley, Calif. - Visitors to Yosemite National Park will again this summer have a free guide service to help them realize the beauties of nature. The California Fish and Game Commission will furnish the guides, and small nature libraries have been installed at various points in the park. Campfire talks, lectures, wild-flower shows, trips and other activities are planned.

NEWS OF THE STARS

Did the Earth Grow Its Own Oxygen?

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

The recent surprising discovery by Drs. Chas. E. St. John and Seth B. Nicholson at Mt. Wilson Observatory of the Carnegie Institution of Washington that oxygen is absent in the spectrum of Venus has raised the question of the source of the present abundant supply of oxygen in the atmosphere of our own planet.

It is believed that all of the planets were originally thrown from the sun by some gigantic eruption billions of years ago. The presence of much unoxidized material in the igneous rocks of the earth's crust implies that the original earth-mass was deficient in oxygen. The ejecta of volcanoes also contain considerable quantities of unoxidized compounds and free sulphur. The outer layers of the solar atmosphere, moreover, are known to contain today only small amounts of free oxygen. These facts all give grounds for the belief that the earth's atmosphere did not originally contain the vast quantities of oxygen that are present in it today.

It has been suggested by the Mt. Wilson investigators that the present abundant supply of oxygen in our atmosphere may be a product of vegetative growth in past geological ages. A layer of coal about two feet deep over the entire surface of the earth, it has been estimated, would equal the amount of carboniferous residue that would be formed in the production through plant growth, of the present quantity of oxygen in the atmosphere. It is not beyond reason to believe that the equivalent of this estimated amount of organic residue may actually exist in the sedimentary rocks of the earth's surface.

If this theory is correct none of the planets contained any appreciable quantities of oxygen in their atmospheres at the time of their ejection from the central solar mass. The ability of a planet to acquire its own supply of oxygen would depend upon the circumstances of its evolution and its physical properties. Bodies of small mass, such as Mercury and the moon, would not be able to hold any atmosphere permanently, owing to their small gravitational attraction which would permit the molecules of their atmospheric gases to escape gradually.

The absence of oxygen from the atmosphere of Venus might be an indirect result of a long rotation period. It is generally believed now that the period of rotation of Venus on its axis equals its period of revolution around the sun so that it

always keeps the same face turned toward the sun. If so, it is very improbable that any vegetational growth could exist on this planet and its evolution would differ radically from that of our own planet.

The method employed at the Mt. Wilson Observatory in analyzing the atmosphere of Venus is to be applied soon to the planets Mars and Jupiter. As Mars closely resembles the earth in the nature of its seasons and the length of its day, its past evolution may have resembled that of the earth more closely that that of any other planet. If so, Mars may likewise have produced a supply of oxygen through the growth of vegetation in past ages amply sufficient to support varied forms of life that are dependent upon oxygen for their sustenance.

NATIONAL ACADEMY OF SCIENCES
TO MEET APRIL 23 to 26

Washington. The annual meeting of the National Academy of Sciences will be held here at the Smithsonian Institution from April 23 to 26, Dr. C. G. Abbot, home secretary, has announced. The leading scientists of the country who have been honored by election to this scientific body each year present the results of their major researches at these meetings.

Dr. Hendrik Anton Lorentz, of the Rijks Universiteit, Leiden, a noted physicist and foreign associate of the Academy, will deliver the principal evening address on April 24, at the joint invitation of the National Academy and the Carnegie Institution of Washington. At each annual meeting of the Academy various medals in recognition of meritorius researches or contributions to science are awarded.

The National Academy of Sciences was established during the Civil War under a Congressional charter, approved by President Lincoln on March 3, 1863. The Academy under this charter "shall, whenever called upon by a department of the government, investigate, examine, experiment, and report upon any subject of science and art". During the past war, it established at the President's request the National Research Council that acted as a clearing house for scientific information under government auspices during the war, and which has since continued this function for science and research in general. The original charter of the Academy limited the members to fifty in number, but this restriction was later removed. Even now election to the Academy has been extremely limited and there are less than two hundred members. The National Academy of Sciences corresponds to the French Academy of Sciences and the Royal Society of England in its leadership in scientific circles. The present officers of the Academy are: Dr. Charles D. Walcott, president; Dr. A. A. Michelson, vice-president; Dr. R. A. Millikan, foreign secretary; Dr. C. G. Abbot, home secretary; Dr. F. L. Ransome, treasurer.

DO YOU KNOW THAT -

Many educators, industrialists, economists and eye experts met in New York recently in an attempt to eliminate the very considerable losses in industry due to defective vision.

The textile laboratory of the University of Washington has been testing cloth for Seattle department stores.

The problems of plague are that of an eternal triangle. The flea has an affinity for and undue familiarity for both rat and man.

A new gold mine was recently discovered in the state of Minas Geraes in Brazil.

DO YOU KNOW THAT -

Although the average farm represents a larger investment than the average city house, usually the farmer is not ready to spend as much for improved sewage disposal as the city dweller.

Travelling at 147 miles per hour for two hours and fifty-five minutes, a special airplane of the Air Service recently made a record trip between Dayton and Washington.

After thirty years of slow, persistent advance since its first appearance in this country near the Mexican border, the boll weevil has now reached the limit of cotton cultivation, except in western Texas, southwestern Oklahoma, northeastern North Carolina, and Virginia.

The tomato at one time was designated as the love-apple.

DO YOU KNOW THAT -

A new industry, the manufacture of canes, is growing in Paraguay. Many fine woods of that country are suitable for the making of walking sticks.

Bees that swarm in the spring make little honey.

One pound of garbage if burned can evaporate one pound of water, in addition to the three-quarters of a pound of water contained in the garbage itself, and can thus be used for power production.

Steps are being taken to standardize the methods of erecting crossings of overhead electrical wires.

DO YOU KNOW THAT -

Condensed milk is one of the most heavily taxed items of manufactured food imported into England.

The Mississippi Valley contains more than one-half of the 107,000,000 population of the United States. The opening up of rail transportation in the Middle West made it possible for that section to become the largest producer in the world of grains and meat, and, in addition, to establish within its borders more than one-third of the aggregate manufacturing activity of the country.

Acetylene gas, generated by the action of water on calcium carbide, is now being used as motor fuel in Germany.

Piles made of tar paper and rope and glue, surrounded by concrete reinforced by wire mesh, are being made in California. It is claimed that they are proof against attack by any known insect or marine worm.

DO YOU KNOW THAT -

Japan is planning a large superpower system similar to that planned in this country. Cost of apparatus ordered in the country is $2,000,000 and the current will be transmitted at 154,000 volts.

A synthetic coal, costing about half the market price of ordinary coal to produce, is claimed to have been made by a Berlin chemist.

Corn silage and wheat straw with either mixed hay, soy-bean hay, or cottonseed meal is a much cheaper ration for wintering beef-breeding cows than shock corn, mixed hay and wheat straw.

Ninety-eight per cent of American industries employ less than one hundred men.

DO YOU KNOW THAT -

As late as the fall of 1920 a highgrade mine of feldspar was discovered near Ottawa, Canada and the material from this is nearly all used for the manufacture of high tension electric insulators.

Drug farming in western Washington state is a profitable enterprise. Belladonna and foxglove are two of the most profitable plants.

Tinned pig tongues, imported from America, have achieved a wide popularity for the midday lunch of British workmen.

The tungsten filament doubled the efficiency of incandescent lamps and provided a white light of far purer quality than any other lamp previously known.

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RESEARCH INQUIRIES

Answered by the Research Information Service,
National Research Council, Washington.

Question--Where was Dr. Frederick Frost Blackman's work on the photosynthetic assimilation of carbon dioxide published? Answer--The following references will give the published accounts of Doctor Blackman's work on the photo-synthetic assimilation: Blackman Philosophical Transactions, 186, 485-502, 1896; Blackman Philosophical Transactions, 186, 503-562, 1896; Matthaei Philosophical Transactions, 197B, 1904; Blackman and Matthaei-Proceedings, Royal Society 76, 402, 1905; Thoday,Proceedings, Royal Society, 82,1-55, 1910; Thoday,Proceedings, Royal Society, 82, 421-450, 1910; Irving,A. Annals of Botany, 24, 805, 1910, October; Blackman,Proceedings, Royal Society B83, 374-88, 384-412, 1911.

Question--Can you refer me to sources of funds for the support of medical research? Answer--A bulletin on research funds was recently issued by the National Research Council in which you will find much usefuh information concerning foundations and special funds. You will note from this bulletin that there are a number of sources from which individuals may secure grants in support of their investigations. We would mention especially the Elizabeth Thompson Science Fund, Research Fund of the American Association for the Advancement of Science and several special funds which are administered by the National Academy of Sciences and the American Academy of Science. Of special funds for medical research there are several which you can readily locate by reference to the index in the bulletin.

Question--Can you furnish a formula for meat branding inks for use in the packing hous industry? Answer--The Chairman of the Meat Inspection Division, Bureau of Animal Industry, U.S. Department of Agriculture, furnishes the following information: For meat branding inks, the following formula is recommended: Water, 45% to 55%; Pure Grain Alcohol, 30% to 40%; Glucose or Corn Syrup, 15% to 20%; Methyl Violet, 1% to 1½%. Alcohol denatured according to Formula 33 of the Bureau of Internal Revenue may be used instead of the alcohol and methyl violet specified. An ink made in accordance with this formula will be found to have satisfactory branding qualities and will meet the requirements of the Bureau of Animal Industry for use in establishments at which federal meat inspection is maintained.
