A pink organ in the cheek, which flashed with a bluish luminescence, was the only part of the fish to glow without the use of adrenalin.

The same "lighting" effect was achieved with second, third and fourth injections of adrenalin; but the stimulant was unavailing upon fish which had been dead for some time. Dr. Harvey's experiment was a second example of stimulation of luminous fish with adrenalin, a previous one having shown that surface-dwelling forms are likewise affected.

Ability of organisms to produce light is due, Dr. Harvey points out, to the slow burning of a substance, luciferin, in the presence of an enzyme, or a substance which assists the chemical reaction without actually being a part of the resulting product. The name of this enzyme is luciferase.

Dr. Harvey prepared solutions of these two substances from a crustacean, Cypridina, and a deep sea shrimp, Systellaspis. He discovered that the mixing of luciferin of one organism with its own enzyme would give plenty of light; if, however, he tried the solutions from the shrimp on those of the crustacean, he got no results.

Light will be produced, Dr. Harvey found, when appropriate solutions from closely related animals are used. He called attention to an interesting experiment that can be carried out with two species of fire-flies, where the luminescence of each differs in color. The luciferin of one species, which gave off yellowish light, was mixed with the enzyme of the other species, whose light was reddish.

The result was not what the person familiar with water colors would expect. Instead of getting light from the mixture which had an intermediate orange color, Dr. Harvey got reddish light, showing that the enzyme is the real source of the luminescence.

THE CAUSE OF THE EPIDEMIC AMONG HORSES IN THE WEST

A GERM of the filterable virus type is the cause of a rapidly spreading and serious disease of horses and mules which has been epidemic in western states, particularly California, during the past several years, as shown in studies by Professor C. M. Haring and J. W. Haworth, of the University of California Agricultural Experiment Station, and Professor K. F. Meyer, of the Hooper Foundation. About 6,000 head were affected in California in one season, 3,000 of these animals dying, according to the report to the *U. S. Army Veterinary Bulletin*.

The virus attacks the brain and spinal cord of the animals, which gives it the scientific name, encephalomyelitis. It is popularly known as Kansas-Nebraska horse plague. Horses and mules are the only animals known to be affected under farm conditions, although the University of California studies showed that the infective virus found in the brain and spinal cord of sick horses can produce the disease in horses, monkeys, rabbits, guinea-pigs, rats and mice when injected into the brain or even when dropped into the nostrils. In California, no cases have been reported in animals other than those kept on farms.

No specific treatment generally applicable to all cases has been found, but studies of the virus are now being actively carried on at the University of California. Treatment at present is being directed toward relieving symptoms. Stock owners are advised to prevent association of horses from infected areas with those from non-infected areas and to keep horses away from streams, canals, ditches and pools, and to provide an abundant supply of fresh well water.

Two types of the disease occur: the sleepy type in which the animals drowse until disturbed, when they may have convulsions, and the walking type in which the animals pace around and around the field. In severe cases the animals fall down and are unable to get up or roll over. Recognition of first symptoms is important because the chances of recovery are greater in animals that are carefully treated and nursed from the very beginning. Unwillingness to be led, lack of spirit, slight wobbly gait, failure to come when called, or, in unbroken colts, failure to run when approached are early indications of the disease.

SEPARATING PARTICLES BY MAGNETISM

A MAGNET so powerful that it will attract substances commonly considered non-magnetic and so separate valuable from worthless minerals was described before the American Institute of Mining and Metallurgical Engineers at its meeting in New York.

Under the force of modern electromagnets more than twenty times as powerful as an ordinary permanent magnet, slate has been taken from coal in the reclamation of vast heaps of mine scrap, it was said, and even common sand of the seashore has been divided into piles of light grains valuable in industry.

The magnet does not lift particles vertically from their fellow particles, it is explained in the report describing the new process which was prepared by S. G. Frantz, of Princeton, and G. W. Jarman, Jr., of New York. But the lines of magnetic force are exerted against a falling stream of particles to force those of greatest magnetic susceptibility beyond a vertical partition.

Thus only a small force is required to divert from their vertical fall substances that respond very slightly to magnetism. So powerful are the magnets now used that they separate materials having a magnetic susceptibility only one one-hundred-millionth that of iron.

"Use of the process is of interest to the ceramic industry for the removal of faintly iron-stained particles from sands and clays which go into the manufacture of glass and sanitary ware," they said. "It is also of interest to all producers of non-metallic materials such as bauxite, coal, fluorspar, kyanite, barite, the rare earths and other substances."

RADIUM IN THE CANADIAN NORTHWEST

Two new rich radium-bearing ore veins were discovered at Great Bear Lake, in northwest Canada, just before the winter freeze-up stopped further prospecting, Hugh S. Spence, Canadian Department of Mines expert, reported at conferences with Washington geologists.

Mr. Spence, as official visitor to the radium strike in Northwest Territories, himself aided in the discovery of the new bodies of pitchblende ore.

Earlier reports of the rich finds of Gilbert LaBine, discoverer of the original radium ore deposits, were authenticated by Mr. Spence, who stated to a Science Service representative: "Beyond any question the pitchblende deposits at LaBine Point constitute a very valuable source of radium. At the present value of radium, ore could easily meet the $400 per ton cost of shipment to the railroad."

More and larger amounts of pitchblende than yet found, containing at present prices, $6,000 to $8,000 worth of radium to the ton, may yet remain to be discovered, Mr. Spence predicted. Two of the veins have been traced for distances of 1,400 and 2,500 feet and all four seem to run together like the fingers of an outspread hand. A still larger and more valuable deposit, he said, may lie at the "wrist" somewhere to the northeast of the present workings.

Another new strike of the precious pitchblende, 12 miles distant from Echo Bay where the first vein of LaBine's Eldorado Gold Mines, Limited, was located, has already been reported on the ground of the rival Northern Aerial Minerals Exploration Company.

Planes were arriving during all the time of his stay at LaBine Point on the Great Bear Lake, Mr. Spence said. These were carrying prospectors on the look-out for further silver deposits. LaBine's number two pitchblende vein interlaced with valuable native silver veins, the best so far discovered in the region, assaying some 9,000 ounces to the ton, had roused the hopes of these adventurers.

Only two men are on the ground at present because of the freezing weather, but mining operations will be started again next month. Fourteen surface pits were being worked at the time of his visit last summer. The ore obtained from these by hand picking averaged 50 per cent. uranium oxide or about one gram of radium to eight tons of ore.

PLANTS BLOSSOMING IN WINTER

FOR all its reputation as a semi-Southern city, the national capital normally gets its share of winter weather; so that it is a bit of an experience for Washingtonians to find things like pansies and pinks in their front yards all winter long.

Professor J. B. S. Norton, of the University of Maryland, has compiled a list of over fifty plants seen in blossom in the District of Columbia since the beginning of December. Some of them represent persistent survivors of the summer and autumn of 1931, others are precocious comers heralding the spring of 1932.

Among the cultivated ornamentals, Professor Norton's list includes roses, pinks, chrysanthemums, zinnias, verbenas, pansies, sweet alyssum, candytuft, phlox, crocuses, hyacinths, paper-white narcissi and irises. The latter are especially noteworthy, for they are not the dwarf irises that appear normally in March or perhaps even late February, but the tall Germanica types, that normally wait until late April or May.

Trees and shrubs seen in bloom are elm, hazelnut, Forsythia and soft maple. Professor Norton has kept records of soft maple, as the earliest of all spring blossomers, for several years, and has never seen it as early as he has this year.

Among wildflowers, wild asters persisted well into December, and violets have been in bloom all winter through. Early comers have been bluets and hepaticas. Oddly enough, however, that earliest of all harbingers of spring, the skunk cabbage, has not yet been seen.

Nor have the weeds been behindhand. Dandelions have been as persistent as the violets in the woods and the pansies on the lawns; and other entries on the list are peppercress, shepherd's-purse, ox-eye daisy and chickweed.

ITEMS

EXPERIMENTS at the Bureau of Standards show that cornstalks may be used to make a substitute for lumber, the annual report states. Subjecting a mat of the fibers to heavy pressure gives a product which is hard, dense and strong, and equipment for semi-commercial production of this artificial lumber is being designed. Insulating wall board resistant to fire and water is already manufactured commercially from cornstalks. Wheat straw is under test as a possible source of paper, though results have not yet been entirely satisfactory. Sugars, which may find use in medical laboratories, have been prepared from cottonseed hull bran. Investigations are under way to find out whether a starch useful in textile industries can be gotten from sweet potatoes. A cheap, effective method of refining cottonseed oil has also been developed. Improved means of obtaining kraft paper from southern pine are likewise being studied.

FOR the first time in the educational history of this country, a policy of x-raying the lungs of all members of the entering classes in all departments of a university has been adopted. This measure was put into practice by Yale University as a further means of safeguarding the health of its students. The x-ray films are made with a view to determining the presence of tuberculosis in any of its manifestations. All students whose chest pictures show indications of trouble are to be carefully followed during their college courses and x-ray pictures of their chests will be made at least once a year. Stereoscopic x-ray films were made last year of 1,602 new students. A total of 283 students, or 17.7 per cent. of those examined, gave evidence of an amount of infection potentially dangerous but, in most cases, not destined to cause trouble.

THE "Katahdin," a new variety of potatoes resistant to the highly troublesome mosaic disease, has been tested by the U. S. Department of Agriculture in all sections of the country and found to be well adapted to the climatic conditions in almost all the states. It was bred by the Department of Agriculture specifically to fight mosaic disease and is highly successful in this, though it is still somewhat susceptible to the related diseases, leaf roll and spindle tuber. No seed tubers are available for commercial distribution, however, for it is felt that further tests are still desirable.