are enclosed in opaque containers. In other rooms are the various types of apparatus for physical therapy: mercury lamps, diathermic devices, arc lamps, and the like; the filing cabinets; in addition, there are assembly and recreation rooms. Foreign physicians who visited the institute at the time of holding of the International Radiologic Congress stated that nowhere else is there an institute so complete and so modern. From the standpoint of capacity, 10,000 patients a year can be given diagnostic examinations and 30,000 patients can receive widely divergent forms of treatment each year.

WE learn from the London *Times* that the Royal Horticultural Society marked its one hundred and twenty-eighth birthday on March 7 by the unveiling of a plaque commemorating the foundation of the society. The plaque was placed on the face of Messrs. Hatchard's building in Piccadilly, and within the shop will be hung an illuminated record. The Horticultural Society of London was founded on March 7, 1804, at a meeting summoned by Mr. John Wedgwood and held in a room of Messrs. Hatchard's. The society received a Royal Charter on April 7, 1809, and in 1861, under the presidency of the Prince Consort, a new Charter was granted and the style and title altered to the Royal Horticultural Society. In 1899 a supplementary Charter was granted to meet the altered conditions, and this in turn was displaced by a new Charter in 1928. The society's first meetings were at Hatchard's. In 1818 it acquired offices in Regent Street, in 1859 in St. Martin's Place, Trafalgar Square, and in 1861 in South Kensington, after the society had taken over the gardens at the site where the Natural History Museum now stands. In 1888 the offices were removed to Victoria Street and the shows held in the Drill Hall of the London Scottish Volunteers. In the centenary year, 1904, the society built its present offices and hall in Vincent Square. In 1928 the growth of the society demanded a new hall, and this has been built in Greycoat Street, close to the old hall, where the office accommodation and library have been brought up to modern requirements. The society has always maintained a garden for the practical side of its work: in its early days at Kensington, then at Ealing, and later at Chiswick. In 1903 Sir Thomas Hanbury gave in trust the gardens at Wisley. The fellowship of the society is now about 27,000.

ACCORDING to regulations approved at a meeting of the faculty of the division on February 18, reported in the *Journal* of the American Medical Association, graduation in medicine eight years after entering college, instead of the present nine years, will be possible at the School of Medicine of the Division of Biological Sciences at the University of Chicago, with the beginning of the spring quarter. The intern year will be included in the eight years. Abolishment of the bachelor of science degree as an admission requirement was also approved. For admission to the medical school, adequate training in physics, chemistry, biology and mathematics is recommended, in addition to a reading knowledge of German or French. After 1933, a reading knowledge of German will be required. It is expected that this preparation will ordinarily be completed in the first year in the division. Selection by the committee on admissions will be based on character, aptitude and scholarship. Evidence of interest and ability in research will commend applicants to this committee. Requirements for the granting of the degree of doctor of medicine, as approved at this meeting, provide that group examinations be abandoned and general departmental examinations be substituted for them. The student will be required to pass a general departmental examination in each department during the quarter in which he completes his work in that department. The requirement of a thesis for graduation is abolished. The degree of doctor of medicine with honors in one department will be given when, in addition to meeting with distinction the requirements for the degree of doctor of medicine, the student has also completed a satisfactory thesis constituting a contribution to knowledge. This degree will be awarded on recommendation of the department and approval of the faculty of the division. The official name of the medical school will be the School of Medicine of the Division of the Biological Sciences.

DISCUSSION

POSSIBILITIES OF NATURAL RADIATIONS FROM THE GREAT BEAR LAKE PITCHBLENDE DEPOSITS ON GENE MUTATIONS

THE possibility of radiations from the earth in producing gene mutations was indicated by the recent work of Babcock and Collins[1] in California and by Hanson and Heys[2] in Missouri. This prompted the

[1] E. B. Babcock and J. L. Collins, "Natural Ionizing Radiation and the Rate of Mutations," *Nature*, 124: 227–228, 1929.

[2] F. B. Hanson and Florence Heys, "A Possible Relation between Natural (Earth) Radiations and Gene Mutations," SCIENCE, n.s. 71, 1828, 43–44, 1930.

writer to point out the possibilities of the recently discovered pitchblende deposits at La Bine point in the Echo Bay region of Great Bear Lake in the Northwest Territories, Canada.

The former compared the rates of occurrence of sex-linked lethal mutations in *Drosophila* in a street-car tunnel in San Francisco, where the natural ionizing radiation was fully twice as great as the radiation in their laboratory at Berkeley. The difference in the rate of occurrence of lethal mutations in the tunnel and in their laboratory, which was 2.5 times the probable error, although probably not statistically significant, is indicative.

The latter, working independently of Babcock and Collins, arrived at a somewhat similar conclusion. After unsuccessfully searching with an electroscope in the Ozark caves and lead mines in Missouri for a location with sufficient increase of ionization over that of the laboratory, they finally utilized an abandoned Carnotite mine in Colorado. The radiation in this mine was 0.39 times as intense as that from one mg of radium when the rays were passed through a 0.156 inch lead filter. Male *Drosophila* flies were exposed for 40 hours in this mine. It was found that the difference in the occurrence of gene mutations between tests and controls was 2.09 times the probable error. Although the results of these two independent experiments are probably not statistically significant, they would seem to suggest that more definite results might be obtained from more strongly ionizing radiations.

From electroscopic tests of eight samples of pitchblende from La Bine Point, Echo Bay, Great Bear Lake, N.W.T., Spence,[3] mineral technologist, Department of Mines, Ottawa, found that the uranium oxide content ranged from 27.88 to 83.90 per cent.; the equivalent range of radium content would thus be approximately from 70.79 to 213 milligrams per ton. Complete chemical analysis of two samples are also given in tabular form. The intensity of radiation from these outcrops[4] of pitchblende would undoubtedly be much greater than the intensity of radiation in either an abandoned Carnotite mine in Colorado or a street-car tunnel in San Francisco.

Considering the work mentioned, it has occurred to me that biologists might profitably investigate the Great Bear Lake pitchblende deposits from the viewpoint of observing gene mutations produced under conditions there. Evidence of this in the flora and fauna indigenous to the district, which includes species of Picea, Betula, Alnus, Ericads, mosses, liverworts and lichens, as well as numerous insects, might be observed in addition to exposing introduced biological entities, such as insects, mosses, fungi and other plants of known genetic constitution, to the action of these natural radiations.

The inaccessibility of the field, some 700 miles north of Edmonton, practically only accessible by airplane, and the lack of the necessary funds and material for this type of investigation has practically placed this very interesting possibility beyond the scope of the writer. No doubt this field would yield some very interesting data in regard to the rôle of natural radiations as a factor in the evolution of species by furnishing hereditable variations upon which the forces of nature could act.

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[3] Hugh S. Spence, "Radium-bearing Minerals from Great Bear Lake, North West Territories," Mines Branch, Dept. of Mines, Ottawa Memorandum Series No. 48: 1–4, 1931.

[4] Hugh S. Spence, "Occurrences of Pitchblende and Silver Ores at Great Bear Lake, N.W.T.," Mines Branch, Dept. of Mines, Ottawa Memorandum Series No. 51: 1–6, 1931.

POSSIBILITIES OF SECONDARY POISONING OF BIRDS AND MAMMALS

IN the winter of 1915, during jack-rabbit poisoning work in Lake County, Oregon, a coyote in the characteristic position of strychnine poisoning was found dead at a haystack. Portions of mutilated carcasses of rabbits that had been poisoned were lying near-by. In most cases the stomach and intestines were the only parts of the rabbit left untouched, but occasionally these also had disappeared. The stomach contents of the coyote found dead were examined and found to contain the stomach of a rabbit together with the contents. It is not common for a coyote to eat the viscera of rabbits. This was a case of direct poisoning from swallowing the poisoned bait in the rabbit stomach rather than secondary poisoning from eating strychnine in the flesh.

The lean meat of several rabbits that had been poisoned with strychnine was fed a dog and some chickens without producing any ill effects.

Hawks have often been observed to eat ground squirrels and prairie dogs so poisoned, without apparent ill effects.

Indians on some of the Indian reservations have been reported to have eaten ground squirrels poisoned with strychnine, without any unpleasant after effects.

Reports have been received that occasionally a dog has died suddenly after eating the bones of a poisoned rabbit that had been exposed for months to the