In his laboratory on the Berkeley campus he described the present status of medical physics and what is emerging as the next step in therapy.

Dr. Lawrence explained, "Here at Berkeley we have produced isotopes in the atom-smashing cyclotron since 1934. The atomic pile, less versatile than the cyclotron, has but one great advantage—mass production of isotopes. That means that such isotopes as carbon 14 are now widely available. It means that cyclotrons can now concentrate on producing those valuable isotopes which are too short-lived to be shipped; they would decay during shipment. We now get carbon 14 delivered; that means that in our cyclotron we can produce more carbon 11, another isotope so short-lived that it loses half its radioactivity within 21 minutes. Yet, by rapid expereimental work, we were able to use it, and have come to astonishing results.

"With the methods now available, that is to say mainly cyclotron and pile, radioactive forms of nearly all the 92 or more elements in the periodic table can be produced artificially. With carbon 14 alone, a dozen new laboratories could be kept busy for the next thirty years, so vast is the scope of its peace-time application.

Beginning of New Era in Medical Knowledge

"We have seen only the beginning of a new era in man's medical knowledge. In the Berkeley laboratories we have used for biological and medical research some 40 isotopes so far, among them carbon 11 (with a half-life of 21 minutes); hydrogen (with a half-life of 31 years); two isotopes of sodium, and one each of phosphorus, sulfur, calcium, iron and iodine. Considering that in the human body there are only some 20 elements of major importance, the scope of research and therapy that might evolve from some 100 radioactive substances become apparently limitless. And medicine may look forward to a revision of accepted theories, to new knowledge, and to new riddles..

Therapeutic Application of Radioactive Isotopes

"In our latest tracer experiment we found that certain redioactive isotopes along with their inactive sister-elements show a definite tendency to deposit themselves in certain areas of the body. It is this tendency which we call 'selective localization' and which promises to develop into a broad new field of therapeutic application of radioactive isotopes. For example, radioactive carbon-monoxide, compounded with the short-lived isotope carbon 11, was gobbled up by the liver and held there for a while, before being released. We know that radioactive iodine 131 tends to settle in the thyroid gland. The concentration of iodine atoms in the gland may be several hundred times that in any other part of the body. Wtih larger than tracer doses it was possible in rabbits to remove their thyroid glands by slow selective radiation which destroyed the glands without damage to other tissue. Other isotopes concentrate in the bone marrow, still others in the spleen.

"What we are now trying to do, after these initial observations and the successful treatment of goiter by internal radiation, is this: we try to find compounds which would localize in a specific area of the body. If we find such a compound for each vital organ, we can introduce it in the body and hit the abnormal area without damage to other organs.

"Many diseases, particularly in the cancerous group, require radical removal of the diseased tissue. Selective radioactive compounds would settle down in the affected areas, bombard the diseased tissue with radiation and destroy it, making the surgeon's work unnecessary. Ultimately, we might find a radioactive compound for each particular organ and for each particular type of cancer.

"To-day we are at the beginning of fundamental research. A stream of contributions can be expected from the mass production of radioactive isotopes which are the stepping stones to the medical methods of tomorrow."—*USIS.*

GEOMAGNETIC STORMS

Some details of the geomagnetic storms recorded at the Alibag Magnetic Observatory during the quarter July to September 1947 are given in the following table in which t_0, t represent the time (I.S.T.) of commencement of the disturbance and its intense phase respectively and T the duration of the intense phase expressed in hours. The ranges in the three different elements (D, H and V) of the earth's magnetic field have also been given, D, in minutes of arc, H and V in γ where $1\gamma = 10^{-5}$ gauss. The maximum *k*-index recorded during the storms have also been given.

Date	t_0	t	T	Range			k_m	Nature of commencement
				D	H	V		
1947	H. M.	H. M.	Hrs.	Min.	γ	γ		
July, 17–19 ..	23 18	18 14	6	8·5	298	62	8	Sudden
August, 15–17 ..	15 20	21 36	8½	10·6	264	72	7	Sudden
August 22-24 ..	14 40	14 43	4	9·0	306	87	8	Sudden
September, 3–4 ..	04 54	11 00	5	14·7	373	135	8	Sudden