met regularly to discuss standardization and to compare measurements on a number of isotopes. As a result of the improvements in standardizing techniques and of the more precise information now available about the iodine-131 disintegration scheme, it has been agreed that a revision of the 1948 standard for the substance is necessary.

In general, an isotope emitting β- and γ-rays may be standardized by counting methods which measure almost directly the number of nuclei disintegrating per second, that is, the number of curies present. An alternative method is the measurement of the γ-ray ionization in air under conditions which permit the result to be expressed in röntgens per hour at 1 cm. from a sample of radioactive material; which result can be converted to curies per gram of the sample by means of a factor (r./hr. at 1 cm. from 1 mC.) deduced from a knowledge of the disintegration scheme, of the γ-ray absorption coefficients in air, and of the energy required to produce an ion pair in air. The 1948 standard of iodine-131 was based on this latter procedure, which gave a conversion factor of 2·54 r./hr. at 1 cm. from 1 mC. of the isotope. Using subsequent information[3] about the disintegration scheme, and assuming that the energy required to produce an ion pair in air is 32·5 eV., the factor is deduced to be between 2·27 and 2·29 r./hr. These, and all other values of this factor quoted, exclude the small contribution due to X-rays arising from internal conversion and to bremsstrahlung which is of the order of 1 per cent of the total. (Experimentally, virtually complete elimination of the X-rays and bremsstrahlung can be achieved by absorption in 0·5 gm./cm.^{2} of copper.)

Recently, samples of iodine-131 have been distributed among the above-mentioned laboratories for measurements by counter methods, which include the defined solid-angle method using end-window β-counters, the 4π solid-angle Geiger–Müller counter, the 4π liquid scintillation counter and the β-γ coincidence method. The results by different laboratories, different counter techniques and different equipment varied by ± 5 per cent. The samples were also measured by three of the laboratories using the γ-ray ionization method. For this purpose, graphite chambers were used which were calibrated with γ-rays from standard radium sources, for which it was assumed that the dosage-rate at 1 cm. from 1 mgm. radium screened by 0·5 mm. platinum was 8·3 r./hr. The results obtained by the three laboratories varied over a range of ± 2·5 per cent. The measurement by the ionization method and by the counter methods were consistent with a value 2·25 r./hr. at 1 cm. from 1 mC. of iodine-131. Accordingly, it is now proposed that a figure of 2·25 r./hr. for the dosage-rate at 1 cm. from 1 mC. of iodine-131 (excluding the contribution due to X-rays and bremsstrahlung) should be adopted as the new standard. This differs from the previous standard in that a quantity of iodine-131 hitherto estimated as 1 mC. will now be 1·13 mC. The maintenance of the standard will be undertaken by the National Physical Laboratory; measurements will be made in terms of γ-ray ionization in graphite chambers, calibrated against a standard radium source (and using the conversion factor of 8·3 r./hr. already quoted), because of the greater convenience of this type of measurement compared with the direct counting methods. It is believed that values based on the new standard will not differ by more than ± 5 per cent from the true values.

A more detailed account is being prepared of the intercomparisons on which this new figure is based.

The mean energy emitted by iodine-131 in the form of β-rays and internal conversion electrons has been re-determined by the Radiotherapeutic Research Unit, using the lined-chamber method[2]. The value based on the new standard is 0·197 MeV. Taking into account all sources of error, this value is regarded as correct within 5 per cent.

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Following the review described above of the British standard of activity for the radioisotope iodine-131, the new standard will be used for dispensing this substance supplied by the Atomic Energy Research Establishment, Harwell, as from January 1, 1953. The provisional Medical Research Council standard, set up by Gray, which has been used for the assay of all consignments supplied by the Establishment from the beginning of 1949 until the present time, will be used for supplies dispensed up to midnight on December 31, 1952.

It should be noted that, whereas 1 mC. of iodine-131 measured by the provisional standard (1949) emits gamma-radiation at the rate of 2·54 r./hr. at 1 cm., 1 mC. of iodine-131 by the new standard gives 2·25 r./hr. at 1 cm. A factor of 1·13 therefore exists between the two standards, and the new standard millicurie will contain less activity than the old one.

No official intercomparison of standards for iodine-131 has yet been made between Great Britain and other countries. However, a series of unofficial measurements, relating standards from Chalk River, Canada, National Bureau of Standards, U.S.A., and Oak Ridge, U.S.A., indicate that the new British standard is in agreement with these, at least within experimental error.

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STRUCTURAL FEATURES OF ANTITUMORIGENIC CORTICOIDS

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The antifibromatogenic action of steroids is not related to any other known physiological action of the latter; it is an independent faculty[1,2]. Thus it seems likely that 'screening' of antitumorigenic steroids may be based, tentatively, on the assumption that the antitumorigenic potency is concomitant with certain structural features of these compounds.