T_A = 1,000° K and T_R = 600° K, P_R would be lower than P_A by about 30 per cent, which is equivalent to a 5° C correction to T_R.

Fig. 2 shows a maximum melting point of 712 ± 5° C, which is in reasonable agreement with the published values. At the maximum melting point the antimony partial pressure is $(3 \pm 1) \times 10^{-6}$ torr (T_R = 360 ± 10° C). Depending on the diffusion coefficient, with this partial pressure up to about 2×10^{15} atoms per sec could be lost from each square centimetre of solid surface. This could lead to serious antimony deficiency.

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British Standard of Radioactive Iodine-131

IN 1952 it was agreed[1] to define the above standard in terms of the γ-ray dose-rate in air at 1 cm from a point source of 1 mc. of iodine-131. Such a procedure, utilizing a graphite ionization chamber, resulted at that time in greater precision and reproducibility than could be obtained by particle counting. It was estimated that the derived disintegration rate would not differ from the absolute value by more than ± 5 per cent.

Recently, the National Physical Laboratory, which is responsible for such standards in the United Kingdom, has issued certificates, in the case of iodine-131, giving disintegration rate values obtained both from ionization chamber measurements and from 4πβγ coincidence counting.

In future, standards will be based on the 4πβγ coincidence method since the inherent greater accuracy is now attainable. Activities quoted may be related to previous standards using a value for the ratio

$$\frac{4\pi\beta\gamma \text{ activity}}{\text{Ionization chamber activity}} \text{ of } 1{\cdot}024 \pm 0{\cdot}002.$$

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Variation of Bed Height with Bubbling in an Air/Catalyst Fluidized Bed

DURING a preliminary investigation of mass transfer from bubbles in a fluidized bed composed of cracker catalyst (mean particle size 60μ), it was noticeable that the presence of bubbles caused a reduction of the height of the bed which was obtained when either a bubble flowstream or individual bubbles were injected into the bed. It appears that gas flows preferentially from the continuous phase into the bubble, and that the hold-up of gas in the continuous phase is reduced because the rising velocity of the bubbles is about 100 times that of the gas in the continuous phase.

The apparatus used for the investigation consisted of a 'Perspex' tube 9-in. diameter with a 'Vyon' distributor and beds of up to 60 in. deep could be accommodated. Preliminary results were obtained using either a single orifice ⅛-in. diameter at the centre of the bed, or three ⅛-in. diameter orifices placed symmetrically in the bed.

By injecting a single bubble, the bed was caused first to expand by an amount equal to the volume of the bubble. Immediately the bubble had left at the top, the bed collapsed to a point well below the initial height. Further, when the bed flow-rate was less than about 1·5 times the minimum fluidizing velocity, bubbles injected at flow-rates of up to 400 ml./min failed to reach the surface. Gas from the bubble was transferred to the continuous phase, and the height of the bed was slightly increased.

From the measurements of the reduction in height of bed it was possible to calculate the effective bed flow-rate and hence the amount of air transferred from the bed to the bubbles. Using either a single or a triple orifice for a given total bubble flow-rate, the rate of air removal from the bed was constant. Thus, within limits, the method of bubble formation had no apparent effect.

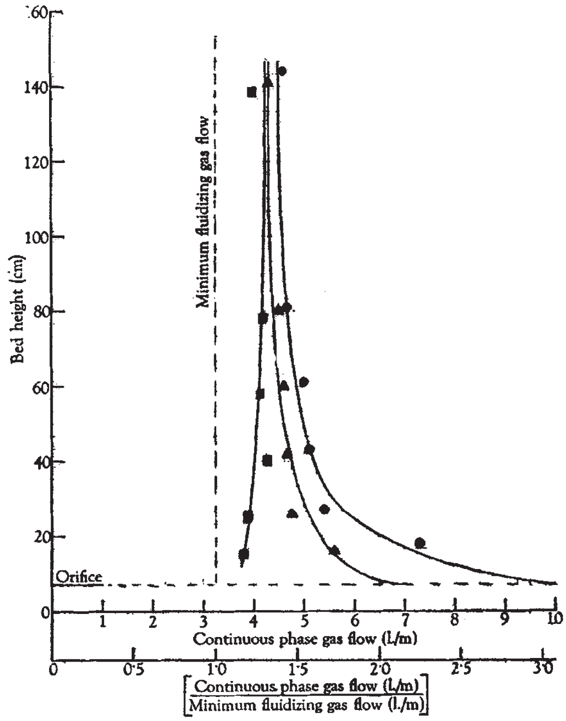

Fig. 1. Injected bubble flow-rate 240 l./m. ●, Initial bed flow-rate 10·0 l./m; ▲, initial bed flow-rate 7·0 l./m; ■, initial bed flow-rate 5·0 l./m

The results of experiments carried out at one particular rate of injection of bubbles into the bed are shown in Fig. 1. The rate of flow of gas in the continuous phase at equilibrium is plotted against height of bed for a range of initial bed flow-rates. It will be noted that, in all cases, the curves tend at large bed-heights to a constant value. The transfer is most rapid immediately above the orifice and the limiting value can be approached from either direction.

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Microwave Inversion Efficiency of Orange Ruby

RECENTLY some ruby, grown by a vapour-phase process, has been found to be orange coloured rather than the normal pink. Some of this has been investigated as a potential maser material by taking a small sample (~10 mg), containing 0·05 per cent Cr^{3+}, double pumping