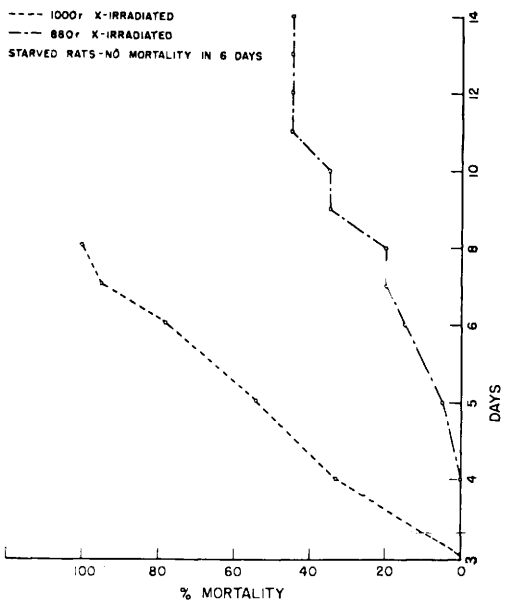

FIG. 3. Mortality following x-irradiation.

As can be seen from Fig. 2, irradiated (880 r and 1000 r) and starved animals lost weight at the same rate through the 7th day. In the group receiving 880 r, the survivors (about 50%) slowly regained weight from the 5th day. These observations are in agreement with those reported by Smith, Tyree, Patt, and Jackson(5).

It is interesting to note (see Fig. 2 and 3) that although the mortality differs greatly among the 3 groups, the weight loss up to 5 days is very nearly identical.

Conclusions. Exposure of rats to 1000 r total body x-irradiation was followed by a fall in the plasmin inhibitor titer of plasma, beginning at the second day after irradiation and then gradually increasing. Since starvation was found to exert a similar effect, no definite conclusions can be made as to whether irradiation *per se* caused a lowering in the titer. Total body x-irradiation (1000 r) and starvation caused a weight loss of nearly identical magnitude.

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Crystalline Components of Catalase. (19514)

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The activities of crystalline catalase preparations have been found to vary considerably. Employing amino acid analysis and immunological tests Bonnichen(1) found that the protein component of horse erythrocyte and liver catalase are identical. The investigations of Theorell(2), using radioactive iron, indicate that catalase of the liver and of the blood are of different origins, but that their albumin components are the same. It has recently been found by solubility technics that beef liver catalase contains one fraction having a Kat. F. as high as 180,000(3). It is generally assumed that there exists, in nature, a number of catalase molecules with different activities(3). Beef liver catalase has been shown to crystallize in the form of long arrow shaped plates(4), and several other forms(5), and beef erythrocyte catalase may be obtained in the shape of characteristic prisms having hexagonal bases(4,6).

In the present report we wish to describe the preparation of cow liver catalase consisting of a mixture of long, thin plates, and prisms with hexagonal bases; the latter are similar to those obtained by Salkowski and Sumner

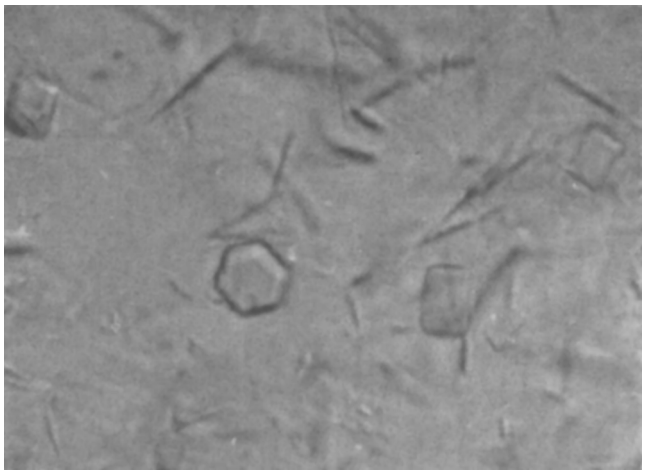

FIG. 1. Crystaline mixture of cow liver catalase. 320 ×.

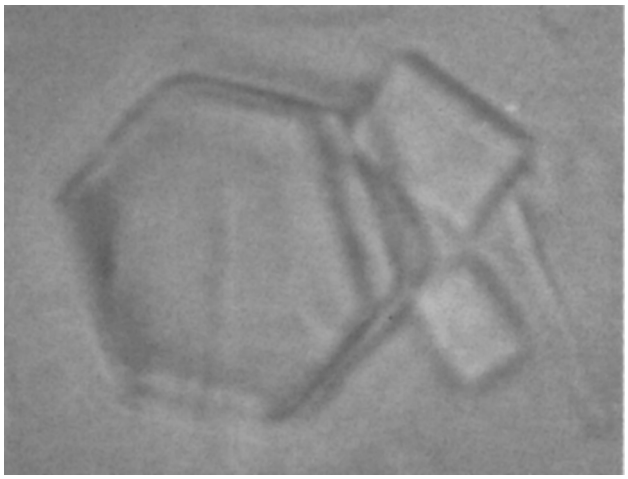

FIG. 2. Prisms with hexagonal bases; component of cow liver catalase. 3200 ×.

from beef erythrocytes(4,6). Our observations appear to support the view that there exist, together in the same tissue, different catalase molecules.

Experimental. Crystalline cow liver catalase was prepared according to the procedure of Tauber and Petit(5). The catalase was recrystallized by dissolving it in the least volume of 0.01 N sodium hydroxide. Without centrifuging, the solution was immediately adjusted to pH 5.8 by the addition of the calculated volume of 0.01 N acetic acid. A small quantity of insoluble matter was removed by centrifuging at room temperature. The clear supernatant was placed in a refrigerator at 4°. In about 3 hours the catalase began to crystallize rapidly in the form of microscopic, long, thin plates and some prisms having hexagonal bases (Fig. 1 and 2). The prisms had exactly the same appearance as the crystals obtained by Salkowski and Sumner from beef erythrocytes(4,6). The activity of our crystalline mixture, as found by the method of Euler and Josephson (7), was 34,000 Kat. F.

This method is applicable to the recrystallization of commercial (Worthington) catalase, which apparently does not retain its crystalline state in the ammonium sulphate solution. From such an amorphous suspension of beef liver catalase, which was kept for 3 years at 4°, the catalase was collected by centrifug-

ing or by removal of the salt by dialysis prior to centrifuging. Recrystallization was readily affected by the procedure just described.

Summary. A simple method for recrystallizing catalase has been described. Some of the cow liver catalase crystals present in the mixture have exactly the same shape as those of beef erythrocyte catalase. This fact points to a multi-molecular nature of cow liver catalase. Since it is difficult, however, to remove all of the blood present in liver, it is quite possible that the described prisms originate from erythrocytes and that the higher active component described by other investigators may have a similar origin.

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Initiation of the Clotting of Blood.* (19515)

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It was recently observed that when hemophilic blood was put in a glass tube which previously had contained a solution of thrombin, but which had been rinsed repeatedly with saline solution, clotting was considerably faster than in a control test tube that had contained only saline(1). Since this simple experiment serves as a useful means for obtaining salient information concerning various factors that play a role in the clotting of blood, it was repeated with certain modifications as recorded in Table I.

From the recorded results, it can be seen that hemophilic blood clotted almost completely in 10 minutes when placed in a test tube which had contained thrombin but which had been repeatedly rinsed with saline. The same blood in a control test tube rinsed only with saline clotted in 40 minutes. Platelet-rich plasma obtained from the same hemophilic subject likewise formed a semi-solid clot in 10 minutes in a test tube that had contained thrombin, whereas the same plasma depleted of platelets by high centrifugation required 90 minutes before a clot of similar density was formed.

Obviously the primary cause of the marked shortening of the clotting time in the test tube that had contained thrombin was a minute amount that remained. Since the tube had been rinsed repeatedly, it seems likely that the thrombin was adsorbed to the glass surface probably as a thin film. Since the platelet-poor plasma clotted very slowly, although the tube contained the same amount of residual thrombin, it is clear that the minute quantity of adsorbed thrombin was not enough by itself to account for the accelerated clotting. Since the platelet-rich plasma, like the whole blood, clotted rapidly, one may conclude that more thrombin was formed in this plasma, which accounts for the decreased clotting time. Since this did not occur in the platelet-poor plasma, it seems evident that the platelets participated in increasing the forma-

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