A severe case of hydrofluoric acid burns of the hand is reported and treatment is described.

Some modification of the treatment of hydrofluoric acid burns is suggested, and the early excision and grafting of the lesions are urged.

I should like to thank Sir Archibald McIndoe, Mr. Percy Jayes, Dr. A. Thelwall Jones, and Dr. A. Lloyd Potter for their criticism and help in the preparation of this paper; and Mr. Gordon Clemetson for the photographs.

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TWO TYPES OF DIABETES MELLITUS, WITH AND WITHOUT AVAILABLE PLASMA INSULIN

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The sensitive technique of assay of small amounts of insulin described by Bornstein (1950) was used by Bornstein and Trewhella (in press) to investigate the plasma insulin content of 11 diabetics. It was found that three had available insulin and eight had none.

We have now investigated the available plasma insulin content of two different types of human diabetes which have been suggested on clinical grounds to be due to (1) lack of insulin and (2) factors other than lack of insulin (Lawrence, 1951).

The first type is generally young and is characterized not only by hyperglycaemia but by rapidly developing *ketosis* and severe weight loss, and requires insulin to live. The second type consists largely of middle-aged obese females with similar grades of hyperglycaemia and glycosuria, but with *no ketosis* and no important loss of weight. Their diabetes is easily controlled by low diets without insulin, particularly if weight is reduced.

Technique

Five patients of each type have been tested immediately after diagnosis and before any treatment. They drank 50 g. of glucose instead of breakfast, and two hours later venous blood was collected in a heparinized

syringe and immediately centrifuged, and 1 ml. of plasma was injected into each of six alloxan-diabetic, hypophysectomized, and adrenalectomized rats. The fall in the true blood glucose of the rats one hour after plasma injection was determined.

The results are read from a standardization curve previously obtained from the same rats with re-crystallized Novo insulin. The method proved sensitive from 1/20,000 to 1/2,000 of a unit of insulin (0.05 to 0.5 milli-unit), according to the formula $E = 67.48 + 41.85 X$, where X is the $\log_{10}$ of the dose in milli-units/100 g. rat. The results are expressed briefly in the Table.

Group 1: Severe, with Ketosis

Patient:	1	2	3	4	5
Sex and age ..	M 32	F 52	F 9	M 28	M 42
Weight (kg.) ..	46	56	25	41	54
Blood sugar ..	431	382	406	268	318
mg./100 ml.	+++	+++	+++	+++	+++
Glycosuria ..	+++	+	+++	+	+
Ketoneuria ..	+++	+	+++	+	+
Mean change in ..					
blood sugar ..	+1	-3	-3	0	-2
Standard deviation ..	±6	±9	±7	±6	±7
Plasma insulin ..					
milli-units/ml.	0	0	0	0	0

0 = below lower limit of the assay.

Group 2: Obese, no Ketosis

Patient:	6	7	8	9	10
Sex and age ..	F 35	F 47	F 53	F 46	M 57
Weight (kg.) ..	79	69	75	85	83
Blood sugar ..	292	381	312	311	232
mg./100 ml.	+++	+++	+++	+++	+++
Glycosuria ..	+	+	+	+	+
Ketoneuria ..	0	0	0	0	0
Mean change in ..					
blood sugar ..	-28	-30	-22	-25	-23
Standard deviation ..	±19	±9	±6	±8	±8
Plasma insulin ..					
milli-units/ml.	0.26	0.29	0.19	0.24	0.20

It seems clear from these results that available plasma insulin is absent and present respectively in these two different types of diabetes. The difference might be due to grades of severity of the same process, but this seems unlikely in view of the widely differing clinical picture. Further tests may show an intermediate content of plasma insulin, but it is to be noted that in the previous series reported no intermediate types were found. The technique opens wide possibilities for research into the nature and aetiology of "diabetes."

We are indebted to Dr. Hallas Mölder, of the Novo Therapeutic Laboratories of Denmark, for crystalline insulin free from the glycogenolytic factor and to Messrs. Boots Pure Drug Company, Ltd., for their research grant for expenses.

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Ethylene oxide is being increasingly used commercially as a fumigant, and a recent Home Office pamphlet (*Fumigation with Ethylene Oxide: Precautionary Measures*, H.M.S.O., February, 1951, price 6d.) outlines the risk of explosion and of poisoning by this not unpleasantly smelling gas. A method of detecting low concentrations of the gas is described, and the wearing of respirators by operators working in pairs is essential during the airing period. First aid consists principally in removal to the open air, artificial respiration, and administration of oxygen.

*Working under a travelling grant from the National Health and Medical Research Council of Australia.