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² Diosi, P., Babusceac, L., and David, C., *Archiv für die gesamte Virusforschung*, 1967, 20, 383.
³ Diosi, P., and Babusceac, L., *American Journal of Veterinary Research*, 1970, 31, 157.

Diabetes Mellitus and Refined Carbohydrate

SIR,—Those of us who have worked in Africa when diabetes appeared to be uncommon must congratulate Dr. A. C. B. Wicks and Professor J. J. Jones (31 March, p. 733), who have extended the observations of other doctors¹ in Salisbury, Rhodesia. They are beginning to elucidate the role of refined carbohydrates as a factor in the pathogenesis of diabetes mellitus.

If one wishes to state the degree of refinement of any starchy carbohydrate, it is desirable to record the crude fibre content; thus maize meal, such as that consumed by Africans in Rhodesia, might vary in crude fibre content from 0.7 g/100 g if of 60% extraction to 1.5 g/100 g if of 96% extraction. That of wheat wholemeal 100% extraction is 2.0 g/100 g, while white flour 70% extraction has only a trace,² probably a crude fibre content of about 0.1 g/100 g. It would be helpful if investigators could state the degree of extraction of the maize meal consumed in Rhodesia. In South Africa a recent analysis reported that Bantu preferred maize meal 80% extraction (crude fibre 1.4 g/100 g), or 60% extraction (crude fibre 0.8 g/100 g).³

Reports of the experimental production of diabetes mellitus in small rodents seldom mention the crude fibre content of the food offered, though tables² can often supply these figures.

Interpretation has been that excessive calorie intakes encourage obesity and hyperglycaemia. This is correct, but a more comprehensive appraisal of the situation suggests that diets rich in undigested fibre have different satiety mechanisms because a larger proportion of the food remains undigested in the bowel; less is consumed.

When an animal feeds on its traditional food, fed *ad libitum*, it seldom becomes obese or develops diabetes. Perhaps man has a similar response, for refined starchy carbohydrates have not been his traditional food in Africa or in the Western World.—I am, etc.,

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- ¹ Wapnick, S., Wicks, A. C. B., Kanengoni, E., and Jones, J. J., *Lancet*, 1972, 2, 300.
² Platt, B. S., *Tables of Representative Values of Foods Commonly Used in Tropical Countries*. Medical Research Council Special Report Series, No. 302, p. 6. London, H.M.S.O., 1971.
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Insulin and Glucose in Treatment of Cardiogenic Shock

SIR,—Dr. S. P. Allison and his colleagues (16 September 1972, p. 675) reported the

value of daily infusions of insulin, glucose, and potassium in cases of severe congestive heart failure. Omitting the potassium, because hyperkalaemia was already present, we have been giving similar treatment to patients in cardiogenic shock after myocardial infarction.

The table shows typical findings in a case of cardiogenic shock before and during the course of one hour after the infusion of glucose 20 g and insulin 20 U over a period of five minutes. Apart from these results, we have seen diuresis begin after 30 minutes in oliguric cases. Our experience prompts us to recommend glucose and insulin infusions in cases of this kind when immediate lowering of serum potassium concentration and an improvement in cardiac efficiency is required.—We are, etc.,

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Prolonged Action of Pindolol

SIR,—Drs. P. D. Nigam and A. S. Malhotra (24 March, p. 742) reported that in a comparative clinical trial of pindolol and propranolol in angina pectoris they observed a prolonged action of pindolol (Visken, LB 46) for about one week after cessation of treatment. Slome¹ has suggested that a sudden withdrawal of beta-adrenoceptor blocking drugs might precipitate myocardial infarction in patients with angina pectoris. A prolonged action of pindolol could therefore offer some advantages.

Our studies in human volunteers² showed, in agreement with experiments in anaesthetized dogs,³ a significantly longer duration of action for pindolol than for propranolol: 5 mg of pindolol and 100 mg of propranolol were equipotent in reducing the increase in heart rate in response to exercise on the cycle ergometer two hours after oral administration. After eight hours pindolol still elicited 84% of its full effect and propranolol 67%. After 24 hours the figures were 36% and 16% respectively.

While the duration of action of pindolol is clearly longer than that of propranolol there is, however, no pharmacokinetic evidence that pindolol accumulates with prolonged administration. At the end of a 52-week toxicity study in monkeys given oral daily doses of 2.5 mg/kg and 25 mg/kg blood levels and urinary excretion data were comparable to those found after a single oral dose of the drug.⁴ Similar results were found in a pharmacokinetic study in man with an oral dose of 5 mg pindolol three times daily for eight days. Blood levels varied within the same range throughout the treatment period and they declined on the last day with the same half-life as after a single dose.⁵ There were therefore no measurable

amounts of pindolol released from the tissues when treatment was stopped.—We are, etc.,

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- ¹ Slome, R., *Lancet*, 1973, 1, 156.
² Aellig, W. H., *British Journal of Pharmacology*, 1973, 47, 621P.
³ Saameli, K., *Die therapeutische Anwendung β sympathikolytischer Stoffe*, ed. H. Dengler. Stuttgart, Schattauer, 1972.
⁴ Rentsch, G., unpublished results.
⁵ Aellig, W. H., and Pacha, W., unpublished results.

Acute Water Intoxication from Compulsive Drinking

SIR,—Dr. E. R. Alexander and others (13 January, p. 89) reported an interesting case of water intoxication in relation to acute psychogenic disorder. We have seen a very similar case of acute water intoxication from compulsive water drinking,¹ and we investigated the patient's water metabolism a week after his admission to hospital, when the intoxication had disappeared. An oral water loading test (15 ml/kg) was followed by a constant negative concentration of water (as with inappropriate antidiuretic hormone secretion), and this was hardly compatible with the profuse diuresis of low specific gravity observed after his admission to hospital.

To find the reason for this we tried to reproduce the water intoxication by infusing isotonic (5%) sorbitol at a rate of 1,000 ml/hr, and every half hour we checked the water concentration. The infusion produced a noticeable lowering of serum osmolality (260 mOsm/kg water). Initially the water concentration was negative, and it became positive only when the serum osmolality reached a value below 260 mOsm/kg water. A similar impairment of the water excreting mechanism was found by Hobson and English.²

Water intoxication therefore occurs only when there is impairment of water excretion as well as excessive water intake. Our findings, which differed from those in neurogenic hypernatraemia,³ made us think that the water intoxication in our case was due to excessive thirst and a lowered threshold for vasopressin release.—We are, etc.,

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- ¹ Linquette, M., Fossati, P., Lefebvre, J., Cappoen, J. P., and Chopin, C., *Annales d'Endocrinologie*, to be published.
² Hobson, J. A., and English, J. T., *Annals of Internal Medicine*, 1963, 58, 324.
³ Mahoney, J. H., and Goodman, A. D., *New England Journal of Medicine*, 1968, 279, 1191.

Artificial Insemination by Donor

SIR,—May I, as a practitioner of A.I.D., be permitted to comment upon the conclusions of the panel on human artificial insemination chaired by Sir John Peel (*Supplement*, 7 April, p. 3)?

Selection of Donors.—Medical students, as a group, are not the best donors. The best donor is a man who has fathered two or three healthy children, which is the only

	Mean Arterial Pressure (mm Hg)	Central Venous Pressure (cm H ₂ O)	QRS (sec)	Serum Potassium (mEq/L)	Blood Sugar (mEq/L)
Before infusion	59	25.5	—	7.05	165
Immediately after	60	—	0.12	6.62	223
20 minutes after	67	—	0.10	5.75	218
30 minutes after	61	22.5	0.08	5.80	193
60 minutes after	71	23.5	0.08	5.05	193