to intervene immediately in crisis situations, and worked out a shorter and more practical technique of interviewing than social workers are traditionally taught. I suspect that many more social workers would do the same if given the chance. At present most of them can only be contacted during office hours and then only if the clerk in the social services department office chooses to tell them that you phoned. The ideal would be local-authority attachment to particular practices, but the next best thing would be reimbursement of the social worker's salary.—I am, etc.,

ANDREW SMITH

Lecturer in Family Medicine,
University of Newcastle upon Tyne
Newcastle upon Tyne

¹ Goldberg, E. M., and Neill, J. E., *Social Work in General Practice*. London, Allen and Unwin, 1972.

Localization of Hepatitis B Antigen in Liver Organ Cultures

SIR,—Hepatitis B antigen has been produced in organ cultures of human embryo liver inoculated with a limited number of known infective sera.¹ One serum, referred to as G.C., was obtained from a young healthy volunteer blood donor whose blood recently caused two deaths from hepatitis in transfused recipients. Examination by electron microscopy of ultrathin sections of a liver organ culture inoculated with 0.1 ml of this serum revealed the presence of spherical particles measuring 20–22 nm in diameter in both the cytoplasm and nucleus of hepatocytes (see figure). The particles were detected four and seven days after inoculation of the organ culture. These particles were present in many of the cells, principally at the rim of the culture. Such particles were not found in control organ culture preparations inoculated with normal human serum.

These particles are very similar to the hepatitis B antigen particles described in anti-

gen-positive liver biopsy material by a number of other investigators.^{2–5} Nowoslawski *et al.*⁶ demonstrated by immunofluorescence the presence of hepatitis B antigen in the cytoplasm as well as the nucleus of hepatocytes of six patients with lymphoproliferative disorders; but by electron microscopy only intranuclear particles were found. These particles were identical to those we describe now. Specific fluorescence was demonstrated in many of the hepatocytes by the direct immunofluorescent antibody technique⁷ in 5–7 μ m sections of the same liver organ culture preparation inoculated with serum G.C. No fluorescence was detected in the control organ cultures.—We are, etc.,

A. J. ZUCKERMAN
R. G. BIRD

Hepatitis Research Unit
London School of Hygiene and Tropical Medicine,
London, W.C.1.

- ¹ Zuckerman, A. J., Baines, P. M., and Almeida, J. D., *Nature*, 1972, 236, 78.
- ² Huang, S. N., *American Journal of Pathology*, 1971, 64, 483.
- ³ Caramia, F., De Bac, C., and Ricci, G., *American Journal of Disease of Children*, 1972, 123, 309.
- ⁴ Dunn, A. E. G., Peters, R. L., Schweitzer, I. L., and Spears, R. L., *Archives of Pathology*, 1972, 94, 258.
- ⁵ Almeida, J. D., Giannini, P., Scalise, G., and Harrison, C. V., *Journal of Clinical Pathology*, 1973, 26, 113.
- ⁶ Nowoslawski, A., Brzosko, W. J., Madalinski, K., and Krawczynski, K., *Lancet*, 1970, 1, 494.
- ⁷ Brighton, W. D., Taylor, P. E., and Zuckerman A. J., *Nature New Biology*, 1971, 232, 57.

Severely Malformed Children

SIR,—In the tape-recorded discussion on malformed children (5 May, p. 284) Mr. H. B. Eckstein draws attention to a strange anomaly—namely, that untreated babies in first-class centres of baby care have all died “within a month,” “within eight months,” or similar figures, and yet surgeons are seeing a number of untreated cases for salvage from other hospitals.

The “100% success” rate for the no-treatment policy contrasts with my own

personal experience 25 years ago, when no patients received primary surgery and most of them received ordinary home care. The survival of quite a number of the latter makes one wonder whether the ordinary standards of baby care are worse than 25 years ago—or is there some other factor in their management?

Another impression which comes over in the recording—perhaps wrongly—is the apparent lack of concern for the maximum fulfilment and the happiness of these severely affected children during their life span, however long or short that may be. One is particularly concerned that the psychiatrist in the discussion does not even hint at the feelings of contentment and security which at this age are important aspects of happiness for the child and which come from knowing and being loved by one person (usually the mother).

A severely disabled child needs this personal affection and attachment, perhaps even more than an able-bodied one and if this poses a heavy burden in the mother and the family, I should have thought that the psychiatrist would be the very one to propose support for the family rather than elimination of the child from the family environment.—I am, etc.,

R. B. ZACHARY

Sheffield

Multiple Factors in Leukaemogenesis

SIR,—In their study of children with leukaemia Bross and Natarajan¹ investigated the association between irradiation in utero and some “indicators of susceptibility” (viral infection, bacterial infection, and allergy) shown by the leukaemic child from birth up to a time six months before diagnosis. They and you, in a leading article (21 October, 1972, p. 128), interpreted their results as showing that “the apparently harmful effects of antenatal irradiation are greatly increased in certain susceptible subgroups of children possessing the indicators associated with a slightly higher intrinsic risk of leukaemia.” However, these findings may be interpreted as showing that children with leukaemia are simply more prone to viral and bacterial infections and allergies before clinical onset of the disease (or are more likely to report such conditions in a retrospective study) and that irradiation is a red herring in this argument. If this is correct, the relative risk of irradiation (that is, the ratio of the risk of a child irradiated in utero developing leukaemia to the risk of a child not so irradiated developing leukaemia) would be the same in children reporting such conditions as those not so doing.

Bross and Natarajan kindly supplied us with the data on their leukaemic patients and controls tabulated by age at diagnosis, intra-uterine radiation history, and susceptibility indicators of infections or allergies (tables I and II). Table III shows the relative risks of irradiation in each age group for those reporting viral or bacterial infections or allergies (R_1) and those not reporting such diseases (R_2). For example, in the first row of table III the relative risk of irradiation in children 1–4 years old reporting viral infections is obtained from tables I and II by a comparison of cases and controls reporting virus infections— $R_1 = (15 \times 43)/(32 \times 12) = 1.68$. Similarly the relative risk of irradiation

Virus-like particles of hepatitis B antigen in the cytoplasm of a hepatocyte from an inoculated human embryo liver organ culture at day 7 $\times 100,000$.