regional pharmacists and their staffs and specially Mrs M. J. Roberts of the DHSS who went to such great trouble to let me know the number of doses of the drugs prescribed. I am also indebted to the Schizophrenia Association of Great Britain for paying for the postal and secretarial expenses involved.

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TARDIVE DYSKINESIA AND DEPOT FLUPHENAZINE

DEAR SIR,

There have been several reports of an increase in tardive dyskinesia with depot fluphenazine treatment (Chouinard *et al*, 1977; Gardos *et al*, 1977; Smith *et al*, 1978). The report by Gibson (*Journal*, October 1978, **132,** 361–5) is an important prospective study which shows a progressive increase in the prevalence of tardive dyskinesia in chronic schizophrenic patients maintained on depot fluphenazine and flupenthixol.

Based on our studies with fluphenazine plasma concentrations following depot injections of fluphenazine decanoate (Nasrallah *et al*, 1978) I would like to propose that the increased occurrence of tardive dyskinesia with depot fluphenazine treatment might be related to the wide fluctuations in plasma concentrations of fluphenazine after an injection of the depot. Our findings show that after a dose of 50 mg i.m. of the decanoate ester in schizophrenic patients with or without ongoing cycles of depot injections, daily fasting plasma levels fluctuated widely between trace and over 100 ng/ml, suggesting an irregular release pattern of fluphenazine from the depot site. For several patients, no plasma fluphenazine could be detected for one or more days after the injection, and higher values (usually between 3–16 ng/ml) could be measured on other days. Different patients achieved different peaks at different times, and no intra- or inter-patient kinetic pattern could be observed.

Given the model of dopaminergic receptor hypersensitivity following the withdrawal of neuroleptic drugs (Tarsy and Baldessarini, 1974), it is possible that chronic fluctuations in fluphenazine plasma concentrations with depot maintenance could have the effect of 'repeated withdrawals', resulting in 'withdrawal' dyskinesia, which may or may not be reversible.

With orally administered neuroleptics, the greatest fluctuation in plasma concentrations occurs with once-a-day dosage schedules. Jeste *et al* (1977) reported that four-times a day administration of chlorpromazine masked the symptoms of tardive dyskinesia, whereas these were clinically evident with once-a-day administration of the same total daily dose.

Obviously, the above 'hypothesis' needs validation with well designed prospective studies, since the implications are important for better maintenance treatment of chronic schizophrenic patients.

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CANCER IN THE LONG-STAY HOSPITALS

DEAR SIR,

I read with great interest Dr Rice's letter (*Journal*, January 1979, **134,** 128), in which he states that he cannot recall during 35 years of psychiatric practice a single case of a chronic schizophrenic patient dying of bronchial carcinoma.

In our recent survey of 1,125 mentally handicapped patients who died during the past 40 years in four

long-stay hospitals (Jancar and Jancar, 1977) we found that only three patients (2 males and 1 female) had died from lung cancer out of a total of 81 cases of cancer deaths. All the patients had had, as a preventative measure against pulmonary tuberculosis, an annual medical examination and regular chest x-rays, and more recently, frequent mass radiography; therefore, very few pathological processes of the lungs would remain undetected. A number of our patients are smokers—some very heavy—smoking both manufactured and home made cigarettes.

The number of deaths from cancer of the gastro-intestinal tract in our study was much higher (47 cases out of 81); above the incidence in the outside population; and increased from 1 per cent to 8 per cent over the past two decades. Increased longevity of the patients, due to antibiotics and to better care and treatment, is an obvious factor contributing to this increase in cancer mortality rate, but diet, drugs, genetics, biochemical and biophysical factors have to be taken into consideration when researching the causes of cancer.

In a consultative document by the Medical Research Council (M.R.C., 1977) 'Review of Gastric and Colo-rectal Cancers', it is suggested that in institutions such as mental hospitals, with long-stay patients and uniform well-documented diets, interesting studies could be carried out. It also comments on suggested correlations between gastro-intestinal cancer, smoking and peptic ulcer.

Giel and his co-workers studied mortality in the long-stay population of all Dutch mental hospitals, including those for the mentally retarded, 1,506 deaths reported over a period of 2 years (1970 and 1971). They grouped known causes of deaths and compared them with death rates in the general population. They stated that malignancies, except in females aged 40–64 years, appeared less common in long-stay patients. They recorded a total of 108 malignancies in their study (53 males and 55 females). The authors were surprised to find 15 cases of ileus amongst 36 people dying of a condition of the gastro-intestinal system. Gastro-intestinal conditions were much more common in long-stay patients than would be expected. The same applied to hepatic diseases; there were 19 cases, of which four were of cirrhosis of the liver. After listing a number of contributing factors to the mortality of the patients they concluded the paper: 'It would be interesting to compare in-patient death rates from before, during and well after the introduction of phenothiazine derivatives. We feel that our findings warrant a screening of individual records to identify the various and collaborating factors'. (Giel *et al*, 1978).

Modrzewska and Böök (1979) reported a study of 'Schizophrenia and Malignant Neoplasms in a North Swedish population'. They found that during 1950–70 deaths in this population numbered 1,359, and 166 were caused by malignant neoplasms, corresponding to a ratio of 122 per 1000 deaths as compared with 163 per 1000 in the general swedish population. The types and sites of the malignant tumours were not significantly different in the two populations. However, because of the characteristics of the population, they conclude that 'a biochemical and genetic link between schizophrenia as well as certain carriers and reduced liability for the development of malignant neoplasms is an interesting possibility'.

Miller, in his James Ewing Lecture 'Psychophysiologic Aspects of Cancer' advocates that, in order to improve the prevention and treatment of cancer, much more knowledge must be acquired about the psychologic history and psychodynamics of the individual. (Miller, 1977).

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A CONTRACT NEEDS A GOAL

DEAR SIR,

The article 'Written Treatment Contracts: Their Use in Planning Treatment Programmes for In-patients' (*Journal*, November 1978, **133**, 410–15), illustrates a clear discrepancy between the author's statement of intent and his actual practice. This discrepancy could have very serious negative consequences for the client and his or her relationship with the therapist. I say this because the author stipulates that in a written treatment contract the goals of treatment must be 'defined operationally'