

organization. Within each of these a unit of the Canadian Society for the Control of Cancer can be organized.

Each member can aid in the educational campaign. He can aid in extending our knowledge regarding cancer by contributing toward the support of Canadian workers in the field of research.

No matter how modest may be the estimate of the individual of the value of the aid which he can give, his help, when combined with that of others like him, will constitute a tremendous weapon in controlling cancer.

J. S. MCEACHERN, *President*,
Canadian Society for the Control of Cancer.

Special Articles

INSULIN THERAPY IN THE FUTURE OF PSYCHIATRY*

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It has been my hope since the development of the pharmacological shock treatment of major psychosis that it will prove to be an important factor in some of the coming changes in psychiatry. I refer particularly to the desirable tendency for psychiatry to come closer to medicine and for medicine to become more closely associated with psychiatry. Both have everything to gain by such an evolution. The psychiatrist has always had rather an isolated position in medicine as exemplified by the term "alienist". His patients have been considered only as a group to be kept away from others, and the psychiatrist has been looked upon as the custodian of such cases, protecting them and the public from their follies.

There are many reasons, both historical and current, that might lead the laity to adopt such a viewpoint, but I wish to mention some of the reasons why, in my opinion, this isolation did exist within the medical specialties. Is it not that psychiatrists sometimes forget and that others, perhaps, have never thought of mental disorders of various kinds and classifications as merely symptoms of disordered function? For many years we have ceased to consider fever, jaundice, tachycardia or colic as distinct diseases. In the face of such symptoms we now look deeper, for disorder due to infection, or to the functions of the liver, blood, heart and hollow viscera. We psychiatrists have carefully classified symptoms, but only in some cases have we gone behind these symptoms to find their origin. We know today that we must consider the mind and its disorders as manifestations of the function and dysfunction respectively of the organism as a whole.

There is nothing new in this tendency to take obvious things for granted and to postpone logical thought or delegate this to those so inclined. For many centuries we were satisfied

to accept life itself without questioning and without inquiring as to its beginnings, variations and potentialities. Now we have some desire of understanding how life began, of its continuation and limitations. We may look forward to a similar search and understanding of the mind and even the variations in the individual personalities.

Early in my studies of mental disorder I began to think of every experience and emotion of individuals as expressions of function. The usually accepted ideas concerning drug and alcohol addiction did not satisfy me, nor had they led to much success in therapy. It seemed evident that the toxins these patients had been subjected to had made definite changes in their personality. Attempts were made to correct these pathophysiological metabolic changes by the use of insulin and with some success. Since then we have learned that profound changes in personality may result from pharmacological shock therapy.

Here then we have an artificial biochemical alteration producing changes in personality. We ask ourselves the question; how are these changes brought about? Let me call your attention to certain features of mental disorder in general. We may first think of what constitutes mind as we know it. Its manifestations in the form of thoughts, emotions and actions are the result of an organization and classification of many simple sensations. There are possibilities in such organization for changes in quality as well as degree. With no sensation we can have no mind, yet clinically we deal with severe disorders of function and various degrees of mental deterioration when all the primary sensibilities are intact. The patient may feel, taste, smell, hear, and see and yet be unable to correlate some or all of these elements into more complex systems, or there may be inadequate emotional responses showing that there has been a change in the quality of such organization. We may now consider the possibility that this organization or integration called *mind*, and the higher associations called *personality*, are recent ontogenic acquisitions. This, together with its continuous activity, renders mind susceptible to pathological change more readily than older structures and mechanisms. Finally, it would appear clinically that

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disorders in one portion of the mind tend to create disturbances in function throughout the whole. In the normal there appears to be a dominant characteristic personality that is carried through all the ever changing experiences. Any pathological change tends to assume this dominant position. This may be compared to a house in which one unclean room will create an odour that will permeate the whole structure. Therapeutically, a remission results when the room is completely closed, a cure results when the room has been completely cleaned.

Insulin hypoglycæmia produces many changes in the vegetative nervous system, probably blocking off those centres in the mid-brain concerned with brain metabolism. It creates a severe sugar hunger in the individual cells; the resulting defense mechanisms are stimulated. Water metabolism in psychosis, about which we know so little, may be a factor in that some of the sudden changes in patients may be related to the dehydration and hydration phases. The fact that, clinically, the treatment often effects contrasting results in one patient, such as changing a manic phase to a depressed phase, while producing an apparently opposite effect in another, such as activating an excited state in a stuporous patient, suggests that different malfunctioning, perhaps malnourished cell systems are being acted upon. I am certain that the psychological and physiological accompaniments of fear have nothing to do with remissions seen in patients. Fear has no place in the treatment of the more profound mental disorders.

I have only touched upon a few of the many problems concerned in the pharmacological shock treatment of psychosis. However, I think it has become apparent that in the solution of these problems psychiatry will be brought to medicine and medicine will come to psychiatry.

DIET AND NUTRITION

VITAMINS IN INFANCY AND CHILDHOOD*

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VI.

Experimental work with animals gives evidence that there are no less than 15 different vitamins. However, only 7 of these are well recognized—vitamin A, three members of the vitamin B complex, namely, B₁, riboflavin, and nicotinic acid, and vitamins C, D, and E.

Vitamin A.—A complete or marked lack of vitamin A results after some 2 to 4 months in the development of an eye condition called

xerophthalmia. In this disease the eye has a peculiar ground-glass appearance and corneal ulcers appear. If the patient is not treated with vitamin A the ulceration will proceed, with final destruction of the eye. Fortunately this condition is extremely rare in Canada. In the last million attendances at the Hospital for Sick Children, Toronto, only one case of xerophthalmia has been noted. A partial lack of vitamin A causes the condition known as night-blindness, that is, a patient is unable to adjust his vision to changes in light intensity, such as occur when going from a bright room to a poorly lighted room. With a lack of vitamin A the columnar cells of the mucous membranes throughout the body gradually become squamous in character. This interferes with their normal function.

The exact vitamin A needs of both children and adults are unknown. However, of all the vitamins vitamin A is the most widely and abundantly distributed. It is present in large amounts in the fat of milk (milk, cream and butter), coloured vegetables, such as carrots, spinach and tomatoes, and in egg, liver and kidney. There is no evidence to indicate that if the child is receiving a reasonable diet it will suffer from a lack of vitamin A, or require additional amounts in concentrated form.

Vitamin B₁.—The story for vitamin B₁ is entirely different from that for vitamin A. Vitamin B₁, or thiamin, is widely but not abundantly distributed in foods. Our most concentrated food source is wheat germ, which, unfortunately, is carefully separated in our modern milling process, the white flour being reserved for human consumption and the germ used largely in animal feeds. This constitutes a great loss of this vitamin to the Canadian people. Another excellent source of vitamin B₁ is yeast, which of course can hardly be considered an ordinary food. We get vitamin B₁ in small amounts in milk, egg-yolk, liver, kidney, in many vegetables, particularly peas and beans, and traces in many fruits. Due to the wide use of finely milled flours and sugars 35 to 45 per cent of the calories ordinarily consumed by the older child and adult contain practically no vitamin B₁. In addition, as vitamin B₁ is water soluble, investigations show that a large proportion of this vitamin in vegetables may go into solution in the cooking water and be discarded. For these reasons, one would expect some evidence of a lack of vitamin B₁ in the Canadian population.

A lack of this vitamin results in the disease beriberi or polyneuritis. This disease is rarely seen in Canada. One of the prominent symptoms of a lack of vitamin B₁ in animals is loss of appetite and the development of atony of the intestinal tract. There is evidence that in some instances these symptoms occur in human beings as a result of a deficiency of this vitamin. Also it has been found that with two

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