It is obvious that in such a programme medical leadership is essential; the medical profession has a challenge to meet in this regard. A recent meeting sponsored by the Committee on Rehabilitation of the Canadian Medical Association went a long way in setting out principles for professional participation. However, these principles must be accepted by the profession as a whole in order to ensure proper professional leadership. Rehabilitation is not the third phase of medicine, but rather a part of good complete medical treatment.

RÉSUMÉ

Le but du programme des allocations pour infirmités récemment institué d'après une entente fédérale et provinciale est de permettre d'accorder une aide financière aux personnes souffrant d'infirmités totales et permanentes et pour qui la réhabilitation ne peut rien offrir d'autre que la dépendance. L'aspect médical de l'administration de ce programme consiste en la détermination du degré d'infirmité. Une commission médicale comprenant des médecins représentant les gouvernements fédéral et provinciaux ainsi qu'un assistant social en est responsable. Dans la préparation des normes devant servir à cette évaluation, trois principes fondamentaux furent énoncés, à savoir: (1) l'importance essentielle d'une bonne documentation médicale dans chaque cas; (2) la revue des autorités médicales compétentes des preuves médicales soumises; (3) la réhabilitation des cas qui s'y prêtent. Il est à voir que les termes "permanent" et "total" ne sont pas pris dans leur sens absolu. Toute personne subissant les effets d'une incapacité majeure, qui semble vouloir se perpétuer, et qui impose des limites restreintes à sa capacité de gagner sa vie et à ses habitudes de vie normales, est éligible. Ces termes s'appliquent aussi bien aux infirmités mentales qu'aux infirmités physiques.

Le médecin examinateur est sans doute le protagoniste le plus important de ce programme. Sa responsabilité consiste à donner une image aussi nette que possible de l'état de santé du candidat. Ces renseignements seront contenus dans un dossier aussi complet que possible. En importance égale au diagnostic, sinon davantage, sera l'évaluation des effets fonctionnels de l'infirmité en cause. Le médecin devra aussi faire un pronostic et demander l'application de procédés diagnostics supplémentaires ou de consultations, s'il le juge à propos. Une formule a été adoptée cherchant à donner un aperçu de l'état de santé du candidat, tout en cherchant à réduire au minimum les efforts de rédaction du médecin, en exigeant de lui qu'il ne donne que les constatations positives et pertinentes.

Ces renseignements sont envoyés à la Commission où des aviseurs médicaux en prennent connaissance et voient à ce qu'ils soient complétés si nécessaire par une consultation ou diverses épreuves spécialisées auxquelles le médecin examinateur n'avait pas accès. L'opinion de spécialistes en diverses matières (psychiâtrie, cardiologie, etc.) sera requise dans certaines circonstances. La demande du candidat recevra l'une des quatre réponses suivantes: acceptée, rejetée, remise, ou recommandé pour la réhabilitation.

L'attitude canadienne vis-à-vis des allocations pour infirmité consiste à individualiser les cas et voir à ce que toutes les possibilités de la thérapie et de la réhabilitation aient été épuisées chez chaque candidat avant qu'il ne soit accepté. Même si l'esprit d'équipe est encouragé, il ne faudrait pas s'imaginer que chaque candidat doive être vu par tous les membres, puisqu'il va sans dire qu'un bon nombre de cas pourront être réglés par une partie seulement du personnel. Ce programme a déjà servi aux vétérans dans l'administration des affaires des anciens combattants, et il semble pouvoir s'appliquer aussi bien à la population civile. Il est à peine nécessaire de souligner l'importance du rôle de la profession médicale dans une telle entreprise. M.R.D.

THE SYNDROME OF ALICE IN WONDERLAND

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THE PURPOSE of this paper is to draw attention to a singular group of symptoms intimately associated with migraine and epilepsy, although not confined to these disorders. While there is wide appreciation of the fact that epileptic subjects, and their blood relatives, are prone to experience bizarre disturbances of the body image, few realize that essentially similar disorders affect migraine subjects and their families. As a result, many of these patients are unjustifiably dubbed "neurotic" and referred to a psychiatrist, while others torture themselves with secret misgivings concerning their sanity. The writer proposes to describe the experiences of these patients under the general heading "the syndrome of Alice in Wonderland", not only because it is germane as a descriptive term, but also because it has the merit of drawing attention to the fact that Lewis Carroll himself suffered from migraine.[5] It will be remembered that Alice, in her dreams, sometimes became remarkably tall or remarkably short. However, she was sometimes aware of changes of an altogether more subtle nature. Thus, there were occasions when she was conscious of some intangible change in herself and her environment. There were also times when she addressed herself as though she were two people, and others when she puzzled over her own identity. In technical terms, she had feelings of hyperschematia, hyposchematia, derealization, depersonalization, and somatopsychic duality. There

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are good reasons for including certain other symptoms within the general purview of the syndrome; they include illusory changes in the size, distance, or position of stationary objects in the subject's visual field; illusory feelings of levitation; and illusory alterations in the sense of the passage of time.

EXAMPLES OF THE SYNDROME IN THE LITERATURE

There are few examples of the complete syndrome in the literature, discounting descriptions of the artificial and perverted experience of subjects under the influence of phantastica drugs (mescaline, etc.). Coleman[3] quoted the case of a young woman with incipient schizophrenia who "like Alice in Wonderland" would "sometimes feel that she was shorter, sometimes that she was taller than she used to be." Lippman[5] described several cases which fit neatly into the picture. One of these, a middle-aged woman with a strong family history of classical migraine, suffered from recurrent headaches with nausea, vomiting, and visual disturbances. She described her more florid symptoms as follows: "I also suffered the illusion of being much taller than I actually am, in relation to ordinary objects. My head would seem far above my hands, far above table tops, etc. At other times, I seem to be ('astrally', I suppose you'd call it) detached from and above my physical body, to be able to observe it and make mental notations concerning it as a separate entity." Hécaen and De Ajuriaguerra[4] cite the case of a woman prone to attacks of right-sided Jacksonian epilepsy, who developed "equivalents" in the form of disturbances of the sense of body image. These she described thus: "I suddenly get the impression that the road is bending about in a zig-zag fashion; I feel as though I'm quite small and surrounded by a vast space. I feel very small—like a child." The cases described below depict the salient features of the syndrome.

CASE REPORTS

CASE 1

A single woman, aged 39, was referred to a psychiatric clinic with an anxiety neurosis complicated by an intermittent disorder of the body image which had worried her since childhood. She complained of recurrent attacks during which she feels that her body is growing larger and larger until it seems to occupy the whole room. "I feel," she said, "that I have got so big that if I put out my hand I could touch the far wall." Less frequently, she feels that she is getting smaller, "shrinking up completely", and that her hands will "drop off and disappear." Her commonest symptom, however, is a feeling that her abdomen is expanding prodigiously. During these crises she is petrified with fear. The attacks, which terminate abruptly, are particularly liable to occur when she is in a state of anxiety or when she has some febrile illness. It is interesting to record that, in discussing her symptoms, she actually referred to Alice in Wonderland. The family history was negative for migraine, but a brother suffered from grand mal epilepsy. Her electroencephalogram was normal.

Commentary.—In this case, anxiety and febrile states favoured the appearance of body-image disturbances in a person with a family history of epilepsy.

CASE 2

A single man, aged 40, was referred to a psychiatric clinic with an anxiety neurosis associated with subjective experiences of a peculiar nature. These consisted in a recurrent feeling that he was much taller or shorter than was actually the case. Sometimes he felt that he was eight feet tall, but at other times he felt as though he had shrunk to a mere three feet. In addition, he was often conscious of a feeling that his head was "twice its normal size and as light as a feather" or that one or other of his arms was missing. Not infrequently he noticed that objects appeared unusually small and distant (teliopsia) or unusually large and close (peliopsia). There were also times when he was aware of a gross aberration in his judgment of time. He had suffered severely from attacks of migraine of many years' duration. Throbbing headaches were preceded by zig-zag flashes of light, vertigo and paræsthesiæ affecting the limbs. Nausea and vomiting often accompanied the headaches. The family history was negative for both migraine and epilepsy.

Commentary.—In this case, the classical symptoms of migraine were complicated by metamorphopsia and distortion of the body image.

CASE 3

A housewife, aged 24, was referred to a psychiatric clinic with "bizarre subjective sensations" of five months' duration arising in the course of a mild obsessional neurosis. Periodically she felt that her stature had altered—"the ground comes up and I go down or vice versa, so that sometimes I feel myself to be six inches tall and sometimes twelve feet." She was occasionally conscious of an illusory feeling that her feet were a yard long, or that she was going up or down hill, when actually walking over flat ground. She also complained of a tendency to lurch into articles of furniture in the absence of a feeling of giddiness. Furthermore, on two or three occasions she had experienced a transient sensation of being "split", accompanied by an extra-campine hallucination of a second head. "Quite suddenly everything seems strange, and people's voices become very faint. I feel that my head is dividing into two. The second head seems to flow off my normal head, and to take up a position a little behind and to the right of it. This 'astral' head appears in the form of a vague, misty shape with a black outline. I feel that it is the detached head that contains my mind." She feels horribly frightened during these episodes, which last a matter of seconds. There is a long history of bouts of giddiness accompanied by nausea, unassociated with headache or teichopsia; she has no ear disease. The family history for migraine and epilepsy is negative. The electroencephalogram showed a constitutional dysrhythmia without specific epileptic activity.

Commentary.—In this case, a mild obsessional neurosis was complicated by distortion of the body image, postural imbalance, and feelings of somatopsychic duality—possibly a migraine equivalent.

CASE 4

A single girl, aged 17, was referred to a psychiatric clinic with a medley of unusual symptoms in the setting of an anxiety state. They included transient feelings of unreality, of depersonalization, of growing small (half her real size), and of duality. The latter takes the form of an invisible alter ego: "I become aware of an invisible double stationed a yard away on my left. This shadowy double seems to contain my mind." She was frequently troubled by an illusory recession of objects in her visual field (teliopsia). It is of interest that her mother became aware of this symptom when the patient was *only five years old,* as the latter developed a habit of calling out, "Mummy, Mummy, come back to me", on perceiving her mother's form apparently receding into the distance. For many years she had suffered from throbbing headaches preceded by teichopsia, vertigo, and paræsthesiæ of various parts of her body. Her brother, mother, and maternal uncle have classical migraine, while there is also a tendency to infantile convulsions on her mother's side. The electroencephalogram showed a paroxysmal dysrhythmia, especially in the temporal lobes, but without specific epileptic activity.

Commentary.—In this case, the family history suggests that her body image disorders, metamorphopsia, and feelings of somatopsychic quality, etc., arise in a setting of migraine-epilepsy.

CASE 5

A housewife, aged 43, was referred to a psychiatric clinic with a mild anxiety neurosis complicated by disorders of the body image. She had complained of repeatedly feeling that her head was double its normal size and half its normal weight, or that her height had dwindled so that she felt only half as tall as usual. On several occasions she has noticed an illusory recession of her bedroom wall (telopsia), with the result that she seems to be standing in a long, narrow corridor instead of a cubicle room. This phenomenon only occurs when she is tired. For many years she has suffered from throbbing headaches associated with attacks of vertigo, palpitation, and teichopsia. Her mother and daughter have suffered from attacks of classical migraine. There is no family history of epilepsy.

Commentary.—In this case, body image disorders and metamorphopsia appear in a setting of classical migraine.

CASE 6

A married woman, aged 32, was admitted to a mental hospital with bizarre symptoms of two years' duration. She complained of a recurrent morbid urge to strangle herself, or anyone else who chanced to be at hand during the attacks. In addition, she was periodically conscious of illusory distortions of her body. On these occasions her head would feel three times its normal size, or her legs so shortened that her feet seemed to be attached just below her knees. Without warning, she would be overwhelmed by feelings of unreality of such intensity that she was compelled to look in a mirror to confirm her presence in the room. Sometimes her left arm and breast would suddenly lose their personal significance; they no longer seemed to belong to her. Not infrequently she noticed an illusory diminution in the size of objects or persons, which at times assumed Lilliputian proportions (micropsia). She was also troubled by recurrent sensations that she was about to die; these attacks of angor animi, which lasted about half an hour, were accompanied by an illusory slowing in the passage of time.

Fourteen years before these symptoms appeared, she began to suffer from throbbing, left-sided headaches accompanied by photophobia and paræsthesiæ of her left face and arm. These attacks ceased after two years and did not return until a year before her admission. However, they were now reinforced by attacks of vertigo and teichopsia. Detailed investigations (including angiography and air encephalography) had been performed at another hospital before her admission. No evidence of structural organic disease had been discovered. The electroencephalogram showed a generalized dysrhythmia with paroxysmal disturbance in both anterior temporal areas, but no specific epileptic discharge. The family history for migraine and epilepsy was negative.

Commentary.—In this case, the disorders of body image, metamorphopsia, angor animi, etc., appear against a background of migraine-epilepsy.

DISCUSSION

Complete or partial forms of the "Wonderland" syndrome appear in the course of a wide variety of disorders, such as migraine, epilepsy, cerebral lesion, intoxication with phantastica drugs, the deliria of fevers, hypnagogic states, and schizophrenia. Of these, migraine and epilepsy are for practical purposes the most important. It should be borne in mind that those symptoms which constitute the "Wonderland" syndrome may precede, accompany, *or entirely replace* the better known manifestations of migraine and epilepsy; they may also cause more distress to the patient, and be more resistant to treatment. The kinæsthetic illusion of bodily distortion experienced by patients with the syndrome are comparable to the visual illusions produced by the parabolic mirrors of a fun-fair. Such patients never lose sight of the illusory nature of their feelings, which are, however, sufficiently vivid to induce them, for example, to glance in a mirror or shop-window to check their height.

The studies of Bonnier[1] might suggest that the body image disorders of migraine and epilepsy are causally related to the vertigo so often present in these maladies. Bonnier described a small series of cases in which attacks of acute labyrinthine vertigo were accompanied by gross distortions of the body image and the development (in one case) of a bipartition phantasy. However, in migraine-epilepsy subjective distortions of the body image often occur *in the absence of a concomitant attack of vertigo.* The nature of the symptoms in the "Wonderland" syndrome strongly suggests that their site of origin is *in the parietal lobe.* Bollea[2] stimulated electrically the posterior parietal cortex and thereby produced disturbances of the body image. They included not only autoscopic hallucinations, but sensations of somatic elongation and illusory disappearance of all four limbs. It is significant that a lesion of the parietal lobe may produce the so-called "inter-parietal syndrome", consisting in vertiginous attacks, dis-

orders of the body image, and metamorphopsia.

In the course of maturation, each individual unconsciously constructs for himself a body image by the integration of sensory data constantly reaching the cerebral cortex from the various parts of the body. This composite body image embodies visual, kinæsthetic, tactile, auditory, and psychical components. The latter component imbues the purely neurological product with a *personal* significance. Clearly, the visual, kinæsthetic, and psychical components transcend the others in importance. The distortions of the body image (hyperschematia and hyposchematia) described in this paper are explicable in terms of the faulty integration of its *kinæsthetic moiety*. The sensations of somatopsychic duality doubtless result from schism and projection of both the kinæsthetic and psychical components. Some such mechanism would explain the invisible doubles (complete or partial) in cases 3 and 4; these shadow-doubles seemed to the subjects to contain their "minds," a state of affairs that strongly suggests a projection of the psychical component of the body image. Sensations of somatopsychic duality are closely allied to the specular (autoscopic) hallucination; in the latter case, the visual, kinæsthetic, and psychical components of the body image undergo simultaneous schism and projection.

The infrequency of reference to the syndrome in the literature is explained by the reluctance of patients to discuss symptoms so far removed from normal experience. In this connection, the remarks of one of Lippman's patients are very illuminating: "I have never told anyone else, as I have not wanted to be called or thought of as queer, and even a supposedly understanding doctor might lift his eyebrows at some of the happenings of a migraine victim, who learns to keep things strictly to herself, excluding both family and physician from her confidence." In the writer's experience, the anxiety of these patients can be appreciably lessened by an assurance that their symptoms are *not necessarily the prelude to insanity.*

The revelation that Lewis Carroll (Charles Lutwidge Dodgson) suffered from migraine arouses the suspicion that Alice trod the paths and byways of a Wonderland well known to her creator.

I am grateful to those of my colleagues who have permitted me to interview patients under their care.

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THE RECOVERY OF FUNCTIONAL ACTIVITY IN THE SHOULDER AND ARM FOLLOWING RADICAL MASTECTOMY

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ALTOGETHER apart from the possible relation of the procedure itself to the incidence of local recurrences or distant metastases—both, in most cases, complications of the mammary carcinoma for which the operation of radical mastectomy was devised—this surgical exercise has been criticized because of the frequency with which swelling of the arm and limitation of scapulohumeral movement occur in the postoperative period.

For those who believe that a radical operation is still the procedure of choice in cases of breast cancer, it becomes necessary to attempt the prevention of these complications and also the reduction of their severity in those patients in whom certain degrees of dysfunction persist, despite careful operative and postoperative management.

CAUSES OF LYMPHŒDEMA

Lymphœdema in the arm may be the end result of one of the following factors, acting singly or in conjunction with the other.

1. In the first place, purely anatomical causes may be responsible after otherwise uncomplicated operations. With the complete dissection and removal of the lymphatic channels traversing the axillary nodal filters, tissue fluids can find egress from the limb only by accessory or collateral channels circumventing the axillary apex by traversing the deltoid region to empty