supporting services, laboratory and diagnostic, must be on a 24-hour seven-day week basis.

Despite the physically and mentally exhausting nature of the work morale is high. This is thought to be largely attributable to the fact that medical and nursing staff have been to some extent self-selective. In addition, there is the fullest discussion of all problems, theoretical and practical, between medical, nursing, and ancillary staff. This is carried out both at the bedside and in the form of lecture-tutorials. Finally, despite the high mortality rate, the successes have been such that no member of the staff requires any further demonstration of the value of the concept of intensive care for patients with acute respiratory difficulties.

Summary

It is suggested that an essential preliminary to the setting up of a new intensive care unit is the conducting of a preliminary survey of the hospital population to determine the likely number of patients requiring this degree of care. Such a prospective study, carried out in the Glasgow Royal Infirmary, to assess the total requirements for intensive care is described. The next step, which may be carried out simultaneously, is to set up a small "pilot" unit in which actual experience may be gained of the problems of organization and care of patients. The final phase, if indicated, is the establishing of a definitive unit for the intensive care of one or other group of patients—for example, respiratory problems, acute coronary cases, renal problems, etc.

The results of the intensive care of 488 patients with acute respiratory problems are presented. Certain aspects of organization and patient care involved in the treatment of these cases are discussed.

We should like to pay tribute to our colleagues of the medical and nursing staff of the Glasgow Royal Infirmary, whose co-operation, interest, and hard work have made the success of the respiratory intensive care unit possible. In particular we are deeply indebted to the staff of the Department of Physiotherapy for their invaluable contribution to patient care. We are grateful to the members of the committee who carried out the original prospective study on intensive care needs in the hospital, and the Board of Management of Glasgow Royal Infirmary for permission to publish the results given in Tables I and II.

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Visuo-motor Disability in Schoolchildren

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In a recent study the visuo-motor abilities of 810 schoolchildren (427 boys and 383 girls) aged 8–9 years were sampled by means of a new group test-battery. This comprised 11 tests designed to explore various aspects of visuo-motor capacity and to provide norms for the assessment of disability. The tests used could be classified under three general headings : (1) dexterity—for example, use of scissors and simple pencil control within guiding lines ; (2) perceptual analysis—for example, the capacity to discriminate overlapping designs or to isolate figures "embedded" in more complex designs ; and (3) constructional skill, as evidenced in block design, drawing, and other simple constructional tasks. Full details of the tasks and the principal findings are available elsewhere (Brenner and Gillman, 1966). In addition, verbal intelligence was measured with the standard National Foundation for Educational Research Verbal Test I. All testing was carried out by two of us (M. W. B. and S. G.).

A high correlation was found between scores on the visuo-motor test-battery and verbal I.Q. However, the inquiry brought to light 54 children (6.7%) with I.Q. above 90 whose scores on the visuo-motor test-battery deviated more than 1 S.D. from the means established for their I.Q. groups. The performance of these 54 children, who were equally divided between boys and girls, was so poor as to suggest a specific developmental disability. Despite the fact that verbal intelli-

gence was in no case below 90 (and not infrequently above 110), school performance was in general found to be poor, especially in regard to spelling, writing, and arithmetic—though reading was as a rule adequate. The characteristic most frequently remarked on in these children was *clumsiness* in gait, in movement, or in fine motor control. Untidy, careless, and slovenly school work was constantly reported.

In the 31 most seriously affected children the visuo-motor test scores deviated 2 S.D. or more from the mean. Fourteen children in this group who were still resident in the area and who remained available for continued follow-up study over a three-year period form the subject of the present report. Each of these children was matched for age, sex, handedness, verbal I.Q., and home and school background with a child drawn from the same sample who had shown no appreciable discrepancy between verbal I.Q. and the score on the visuo-motor test-battery. The children in both groups, which are termed the experimental and control groups, were retested one year after the initial examination, and their progress at school was followed for two further years. Information regarding previous history was obtained from parents, supplemented in some cases by reports from general practitioners. In interviews with parents and teachers, semi-standard forms of questionary were used, and no information was given on whether a particular child had been assigned to the experimental or the control group. All test data were scored by at least two of us independently.

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Intelligence Test Scores

The children in both groups were tested on the Wechsler Intelligence Scale for Children one year after completion of the initial survey. In the experimental group the mean verbal I.Q. was 108.5 and the mean performance I.Q. 94.1. In the control group the mean verbal I.Q. was 110.1 and the mean performance I.Q. 115.6. Thus the discrepancy between verbal and performance I.Q. was 14.4 (V 7 P) in the experimental group and 5.5 (P 7 V) in the control group. This difference is significant at the 1% level (*t* test for small samples).

The marked inferiority of children in the experimental group in non-verbal tasks was shown also on a number of other standard tests which call for the exercise of spatial judgement or manipulative skill. These comprised the draw-a-man test (Goodenough, 1926) ; the Bender-Gestalt test (Bender, 1938),

both the Pascal and Suttell (1951) and the Koppitz (1964) scoring methods being used ; the Stanford-Binet " plan-of-search " subtest (Terman and Merrill, 1937, Form L) ; a peg-board design test adapted from the Goldenberg Marble Board (Strauss and Kephart, 1955) and including an additional immediate memory test ; and a right-left discrimination test (Benton, 1959). The results are shown in Table I. It will be seen that, with the sole exception of the right-left discrimination test, the differences in mean scores between the two groups (Goodenough, 1926 ; the Bender-Gestalt test (Bender, 1938), are all significant at the 1% level. In the case of the Bender-Koppitz, the scoring system measures number of errors ; hence the lower the score the better the performance.

Birth and Medical Histories

The main findings relevant to birth history, previous illnesses, and present condition of the children in the two groups are presented in Table II. It would appear from this information that the children in the experimental group include a considerable number with indications of exposure to a variety of perinatal hazards. There are also definite indications of hyperkinesis, clumsiness, speech defects, or poor motor co-ordination in a high proportion of these children. In the control group, on the other hand, indications of prenatal or perinatal hazard, clumsiness, hyperkinesis, or poor co-ordination are virtually absent.

TABLE I.—*Mean Scores and Standard Deviations on Seven Visuo-spatial Tests*

Test	Maximum Score	Experimental Group		Control Group		Difference
		Mean	S.D.	Mean	S.D.	
Draw-a-man	25	7·39	3·30	16·25	3·08	8·86*
Bender–Gestalt ..	30	14·07	3·10	27·79	1·57	13·72*
Bender–Koppitz ..	25	6·40	2·52	1·50	1·45	−4·90*
Plan-of-search ..	3	0·79	0·77	2·50	0·82	1·71*
Peg-board design ..	9	6·21	2·37	8·86	0·11	2·65*
Peg-board memory ..	9	4·08	1·61	8·38	1·33	4·30*
Right–left discrimination	6	4·69	1·54	5·50	0·73	0·81†

* Significant at 1% level.   † Not significan'.

TABLE II.—*Birth and Medical Histories*

Subject	Birth History			Medical History	Present Condition
	Maternal		Infant		
	Pregnancy	Labour and Delivery	Neonatal Condition		

Experimental Group

Subject	Pregnancy	Labour and Delivery	Neonatal Condition	Medical History	Present Condition
E 1	Normal	Normal	Restless	No illness	Speech defect. Defective vision. Hyperactive
E 2	,,	,,	,,	Occasional eczema. Whooping-cough (3 yrs). Measles. Mumps. German measles. Chicken-pox	Normal
E 3	,,	Breech delivery	Under 5 lb. (2,270 g.)	German measles. Chicken-pox. Mumps. Perforated ear-drum	Slight hearing loss. Hyperactive
E 4	Diabetes	Caesarean section	Restless	Hospital examination for slow development (21 mth). Speech defect	Normal. Slight clumsiness
E 5	Normal	Normal	Rh-negative	Infantile eczema. German measles. Mumps. Chicken-pox	Clumsy
E 6	Previous miscarriage. Toxaemia	,,	Restless	Infantile eczema. Severe catarrh	Overweight, grossly clumsy
E 7	Normal	Labour 36 hours	Slightly jaundiced	Mumps. Chicken-pox. German measles. Severe measles (7 yrs)	Slight fine motor incoordination
E 8	,,	Induced labour, forceps delivery	Normal	Asthma. Severe measles (4 yrs). Tonsillectomy (5 yrs). Appendicectomy. Pneumonia (6 yrs)	Clumsy, slightly overweight. Emotionally disturbed. Asthmatic
E 9	,,	Normal	Restless	Chronic bronchitis. Tonsillectomy (4 yrs). Pneumonia × 3. Antrum surgery (6 yrs)	Peculiar shuffling gait. Defective vision
E 10	,,	Premature birth	Under 5 lb. (2,270 g.). Very restless	Infantile asthma. Measles. Mumps. Chicken-pox	Speech defect. Underweight. Undersized
E 11	,,	1 month premature	Over 5 lb. (2,270 g.)	Severe infantile bronchitis. Measles. Chicken-pox	Emotionally disturbed
E 12	Unknown	Unknown	14th child, poor home conditions	Unknown (mother deceased)	Normal
E 13	Previous miscarriages	Normal	Rh-negative	Severe measles (4 yrs)	Emotionally disturbed. Clumsy
E 14	Psychological distress	Premature birth. Twins	Elder of twins. Wt. 4 lb. (1,815 g.). Incubator 2 weeks. Frequent vomiting	Fit with high temperature (3 yrs). Severe measles. Mumps. Tonsillectomy (7 yrs)	Undersized. Underweight. Poor motor co-ordination

Control Group

Subject	Pregnancy	Labour and Delivery	Neonatal Condition	Medical History	Present Condition
C 1	Psychological stress. Previous miscarriage	Episiotomy	Normal	No illness	Normal
C 2	Normal	Normal	,,	Severe measles (1 yr). German measles. Mumps. Chicken-pox	,,
C 3	,,	,,	,,	Bad fall down stairs (15 mths). Measles. Mumps. Chicken-pox	
C 4	High B.P.	,,	,,	Cardiac surgery, arterial stricture (5 yrs). Chicken-pox. German measles. Scarlet fever	
C 5	Normal	,,	,,	Migraine	,,
C 6	,,	,,	,,	Measles. Tonsillectomy (5 yrs). Chicken-pox	
C 7	,,	,,	,,	Measles. German measles. Mumps	
C 8	,,	,,	,,	Measles. Mumps. Chicken-pox	,,
C 9	High B.P. (chronic)	,,	Restless; colicky	Catarrh. Severe measles (2½ yrs)	,,
C 10	Normal	,,	Normal	Measles. Chicken-pox. Mild whooping-cough. Temporary enuresis due to emotional upset (10 yrs)	,,
C 11	,,	,,	Restlesss	Measles. Chicken-pox. Mumps	,,
C 12	,,	,,	Normal	Measles. German measles. Chicken-pox. Scarlet fever	,,
C 13	,,	,,	,,	Measles. Mumps. Chicken-pox	Emotionally disturbed following death of father
C 14	,,	,,	,,	Pneumonia × 3 (5–6 yrs)	Normal

In their developmental history there was a definite suggestion that the children in the experimental group had been slower in attaining their "milestones" than the control children. Eleven mothers of children in the former group volunteered the information that they thought their children were clumsy or had particularly poor fine motor co-ordination. (Typical comments were: "He'd fall over a match-stick"; "She's absolutely useless with her hands"; "It took him twice as long as it should to learn to ride a bicycle.") Several of these mothers also confessed that their children had been very slow to learn to dress themselves, their greatest difficulty having been in learning to tie shoe-laces or fasten buttons.

Educational Status

Information from school records and interviews with teachers disclosed that only two of the children in the experimental group were thought to have made satisfactory progress at school. In the control group, on the other hand, only two ,children were thought to have had any difficulties at school.

The school subjects which presented the greatest obstacles to the children with visuo-motor handicap were spelling and arithmetic. In the case of arithmetic, difficulty lay less in connexion with basic principles than with the layout of written work. Handwriting was almost always poor, and two children were backward in reading.

Despite the fact that the two groups were so closely matched for verbal intelligence, only one child with visuo-motor handicap passed the eleven-plus examination, as compared with five children in the control group. Among the failures in the experimental group were a boy with a verbal I.Q. of 137; another, with an I.Q. of 128, refused even to sit the examination because of his anxiety about arithmetic.

As might be expected, the children in the two groups differed greatly with regard to interests and hobbies. In the control group 11 children enjoyed model-making, carpentry, jigsaws, or, in the case of girls, knitting or sewing; in the experimental group, on the other hand, not a single child enjoyed any of these activities. Only one child in the experimental group, as compared with eight children in the control group, was reported to be at all proficient at games.

Ratings by teachers of a number of personality traits revealed marked differences between the two groups. Whereas there was little difference in the case of traits such as concentration or persistence, most children in the experimental group were regarded as clumsy, awkward, untidy, and inept on the sports field. Two were rated as overactive. Most of these children tended to be described by teachers as particularly irritating, difficult, lacking in self-confidence, and unpopular with their peers.

Emotional Adjustment

According to their parents, six children in the experimental group and 12 in the control group were normal or well-adjusted. Seven in the experimental group and two in the control group were said to have shown some behaviour disorder. This was described as severe in three cases, two of which were in the experimental group. At the same time it is noteworthy that only two children, one in each group, had on any occasion been referred to a child-guidance clinic.

Discussion

It is significant that the children with visuo-motor handicap described in this paper were identified not by referral from clinics or hospitals but by screening a supposedly normal school population. Indeed, only one child had ever been referred to a child psychiatric clinic, and then on account of emotional rather than perceptual-motor disability or difficulty in learning.

Yet most of these children had for years been regarded by their parents as abnormally awkward or clumsy, and by their teachers as untidy, difficult, and irritating. In spite of mounting problems at school, none had been referred to the educational psychologist or the child-guidance services.

Somewhat similar cases have been described by Walton, Ellis, and Court (1962) and Gubbay, Ellis, Walton, and Court (1965). Our findings bear out the contention of Gubbay et al. that developmental agnosic-apraxic syndromes are a great deal more common than is generally supposed. We can also confirm their allegation that when these disorders are present without obvious neurological signs the children affected seldom receive the understanding and sympathy which might be thought their due. As these authors point out, such children are often accused of laziness or misbehaviour, or suspected of being mentally dull. "The natural outcome is a feeling of frustration, often leading in turn to a behaviour disorder which aggravates the child's problems of learning and performance" (Gubbay et al., 1965).

Though the similarity between developmental and acquired agnosic-apraxic defects should not be overstressed, the resemblance between the visuo-motor difficulties displayed by these children and those of neurological patients with posterior cerebral hemisphere lesions (Critchley, 1953) is too striking to be ignored. Though the element of unilateral neglect is lacking, the failures in spatial judgement and the difficulties in carrying out simple assembly and constructional tasks are almost identical with those displayed by patients exhibiting visuo-spatial agnosia or constructional apraxia. It is also noteworthy that constructional apraxia in adults is often associated with defects in spelling and calculation, which were also noted in our children with visuo-motor handicap. Similar findings in some children with developmental dyslexic syndromes have been described by Kinsbourne and Warrington (1963).

The aetiology of visuo-motor and kindred defects in otherwise healthy children has been discussed by Gubbay et al. (1965), who call attention to the not infrequent incidence of minimal signs of pyramidal or cerebellar dysfunction, to mild grades of E.E.G. abnormality (as a rule diffuse though occasionally focal), and to a high incidence of perinatal abnormality. These findings led them to the conclusion that underlying brain damage is responsible in a majority of cases. Though no formal neurological examination could be undertaken in the present inquiry, there was evidence of clumsiness or poor motor co-ordination in 11 children in our group with visuo-motor handicap and of hyperkinesis in two. There was also evidence of perinatal abnormality in at least six cases. It is probable, therefore, that a minimal grade of organic cerebral dysfunction underlies visuo-motor impairment.

It may be urged that a need exists for the early detection and proper management of children who present agnosic-apraxic disabilities of the type described in this paper, irrespective of whether or not they are associated with obvious neurological signs or with educationally more prominent defects such as developmental dyslexia. From an educational point of view, visuo-motor handicap has important implications for academic progress, secondary-school selection, and choice of career; and its relatively high incidence in a "normal" school population should be appreciated by teachers and educational authorities generally. From a psychiatric point of view, early detection and recognition of agnosic-apraxic disorder would do much to allay parental anxiety and to reduce the incidence of consequent psychiatric disturbances. It should be added that research into the degree to which the disability may be overcome, or compensated, by appropriate remedial training is urgently needed.

Summary

A survey of visuo-motor ability in a sample of 810 healthy schoolchildren brought to light 54 cases (6.7%) in which

performance was so deficient as to suggest a specific developmental failure. Fourteen of these children were matched for age, sex, handedness, verbal I.Q., and home and school background with an equal number of children drawn from the same sample who had shown no evidence of selective visuo-motor impairment. Both groups were followed up for a three-year period.

The children with visuo-motor defect were found to be significantly inferior to the controls on a series of tests of spatial judgement and manual skill, to present a variety of educational problems, especially in regard to spelling and arithmetic, and to give evidence of a relatively high incidence of maladjustment. There was also evidence of a relatively high incidence of perinatal abnormality in this group, raising the possibility of minimal early brain damage.

This study supports the contention that agnosic-apraxic disabilities in otherwise normal children are by no means rare and warrant wider recognition.

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Effect of Salicylates in Urticaria

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The ingestion of aspirin often seems to be responsible for attacks of urticaria and it has been assumed that there is an immunological basis for this effect. However, in the past few years it has been realized that in some patients with chronic urticaria which is apparently unrelated to food or drug allergy an exacerbation may be caused by taking aspirin (Calnan, 1957 ; Warin, 1960). The purpose of this investigation was to determine the incidence of this phenomenon and whether there are any clinical differences between patients with chronic urticaria who react in this way to aspirin and those who do not. In addition, we wished to discover which part of the aspirin molecule was responsible and whether the effect extends to the physical urticarias and weals induced by intradermal injections of histamine.

Subjects and Methods Used

Patients included in the study were drawn from those routinely seen in the outpatient department at the Bristol General Hospital. Others were referred to us by colleagues and in answer to a circular sent to general practitioners in the area. For the purpose of this study we have defined chronic urticaria as urticaria without an obvious cause which had been present for at least six weeks. All the patients had dermal weals, most of them also had attacks of angioedema. A few who presented with angioedema had had at some time a phase of dermal wealing. A total of 228 patients have been studied. The proportion of males to females was 1 : 1.7, and ages ranged from 3 to 71 years.

As part of a detailed interview patients were questioned regarding the ingestion of aspirin or aspirin-containing compounds, and any association with an increase in weals. If there was any possibility of exacerbations from this cause an aspirin test was carried out. This was done on a patient-blind basis, and consisted of control inert tablets identical in size, colour, and taste to aspirin labelled "A" and aspirin

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tablets labelled "B." The inert tablet was always taken first, as it was felt that if the patients were given the aspirin first and reacted badly to it they would be reluctant to take the second tablet and so invalidate the test. A and B tablets were taken on consecutive days, the dose varying according to the history. Thus if the history were suggestive of an aspirin reaction the initial dose was 300 mg., whereas if the history were less certain it was 600 mg. of aspirin. Any change in the skin and the timing of such a change was noted by the patient. In eight patients the provocation tests were repeated with increasing doses of aspirin. In 21 of the patients who reacted to the test doses these were repeated with sodium salicylate (18 patients) and phenyl salicylate (3 patients) in equivalent molecular doses.

In order to assess the effect on physical urticaria 10 patients with dermographism, five with cholinergic urticaria, and three with cold urticaria were studied. Measurements in all cases were carried out four hours after administration of an inert tablet and later aspirin (300 or 600 mg.). In the dermographic patients a standard method of measurement of the wealing tendency was evolved. A spring-loaded blunt-ended projection which could give known pressure effects of 60, 120, 180, and 240 g. was applied to the volar surface of the forearms in a 3–4 cm. line through a piece of thin metal, cut to admit the projecting point. The width of the weals was measured direct after seven minutes and a graded response to the different pressures obtained. Patients with cholinergic urticaria were exercised for 10 minutes and the amount of wealing was assessed clinically by the patient and the observer. In cold urticaria the size of the weal produced by contact with ice for 10 minutes was difficult to measure and was again assessed clinically. Four patients with urticaria pigmentosa were also studied and weals measured with the same method as used in the dermographic patients before and after aspirin.

In a group of 14 patients comprising four who had reacted to the aspirin test and 10 who had not, the effect of aspirin on induced histamine wealing was decided by measuring the weals produced by intradermal injections of