tradition and by the father's careless insistence in a profession for which he was completely unfitted by temperament. After a few years of struggle he became disabled by a neurosis which prevented him doing any professional work for over twenty years. The other day I saw a similar instance in the making. A very pleasant, energetic, sociable boy of 16 was destined by his father for one of the learned professions requiring an academic degree—and, if possible, a distinguished degree. The father nevertheless did not hesitate to call his boy an idiot to his face if he did not bring home a good school report—and his reports are usually very ordinary. His mother became alarmed at the situation that was developing, and brought the boy for examination and advice. He proved on testing to have an intellectual capacity only slightly better than the average, and certainly not one that would have taken even an ordinary degree with much comfort. On the other hand he was unusually good in mechanical tests. We therefore advised strongly against a professional career requiring university training, and suggested work for which his exceptional mechanical ability and his pleasant personality would stand him in good stead: for in this competitive age, a cardinal principle of survival is to choose work which will give scope for the best talents one has. One can easily bury a talent by choosing the wrong career, and so rust in mediocre dissatisfaction instead of happily and successfully fulfilling one's bent. Not only unhappiness, but something more than unhappiness—namely, nervous or mental illness—may be avoided by the careful estimate, as it were, of the assets and liabilities of the individual. This is best made, at the latest, on leaving school, and probably a preliminary test should be made some years earlier. Work of this kind promises to become a routine connexion with clinics for "child guidance."

A NOTE ON URINARY "PROTEOSE"

BY

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In a number of publications,¹ Oriel and his collaborators have described an ether-extractable nitrogenous substance (which they term a "proteose") occurring in urine. Though they find it in small amounts in normal urine, these workers claim that in allergic conditions the urine contains much more of this proteose, which may then account for 1 to 5 per cent. of the total urinary nitrogen. Such augmented excretion of proteose is especially marked during activity of the disease, and may disappear during the periods of remission. More important than this, however, are the claims that each patient gives an inflammatory skin reaction when injected intradermally with his own proteose or with that from a similar case (but not with any other), and that after a graduated series of injections of his own proteose the patient may show definite clinical improvement.

These claims are of very great importance in the treatment of so-called allergic conditions. The "proteose" treatment would vastly simplify the present procedure, since, among other things, it would render unnecessary the search for causative proteins. We have therefore carried out a number of experiments to see whether the statements of Oriel could be substantiated in an inde-

pendent laboratory. The proteose was at first prepared by the method described by Oriel and Barber,² but later this was modified slightly in accordance with instructions contained in a private communication from the former. The reactions and solubilities of the substances we obtained were in agreement with those described in Oriel and Barber's paper, and in Dr. Oriel's letter. All proteoses were isolated during periods of exacerbation of the disease under investigation. So far as the quantity of proteose is concerned, our results are in general agreement with those reported by the original investigators (see Table I).

For skin testing 1 in 10,000 dilution of the proteoses was prepared in normal saline, with the addition of a little sodium hydroxide. The final solution had a pH of 7.8 to 8.0. The proteose was kept in powder form, and solutions for injection were made up as required.

TABLE I.—*Urinary Proteose and Nitrogen in Allergic Conditions*

Case	Condition	Proteose	Nitrogen
		Mg. per 100 c.cm.	Percentage of Total Nitrogen
XI	Asthma:		
	No attack	5.0	0.44
	"	4.3	0.48
	"	3.7	0.50
	"	6.0	0.73
	"	4.7	0.50
XV	During attack	14.3	1.21
	Angioneurotic oedema:		
XII	Oedema present	23.0	2.23
	Asthma and eczema:		
XII	No attack	35.0	1.86
	"	9.3	1.19
	"	6.0	1.20
	"	2.3	0.77
	Wheezing	11.0	5.79
	Severe attack	30.0	10.71
XII	No attack	7.0	1.11
	"	4.0	1.74
	Severe attack	44.0	4.49

RESULTS IN SERUM URTICARIA, ASTHMA, ETC.

Samples of proteose obtained from eight cases of serum urticaria (Cases I to VIII) were tested intradermally in the case from which they were isolated and in one or more of the others. Each of the eight cases was further tested with proteose from a case of chronic urticaria arising from unknown causes. Six of the serum urticaria cases gave a positive reaction to their own proteose and to one or more proteoses derived from the others. The two remaining cases (VII and VIII) reacted neither to their own nor to each other's proteose. All eight gave positive reactions to the proteose from the case of chronic urticaria. The inflammatory reactions, including those noted in subsequent experiments, comprised two stages. A wheal, varying in size from a threepenny-piece to a sixpence, developed after about ten minutes at the site of injection of the proteose, but not at that of the saline control. It subsided completely in from fifteen to twenty minutes, and was regarded merely as a slight exaggeration of the phenomenon frequently observed to follow any type of intradermal injection. In those individuals giving what has been regarded as a positive reaction, a second inflammatory process commenced to develop at the site of injection in from two to three hours, reaching its maximum in from five to seven hours. This late reaction consisted of oedema without actual wheal formation, and a dusky red flare covering a tender area approximately 5 by 2.5 cm. The reaction persisted for some twelve hours and then faded, leaving slight staining of the skin. In the tables, wherever comparisons have been possible

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and measurable variations have been observed in different cases injected with the same proteose, +++ indicates a fully developed reaction, ++ and + those of milder degrees.

Proteose Reactions in Skin Disease and Normal Cases

TABLE II

	V	VI	N	U	Control
Seborrhoeic dermatitis...	+++	+++	+++	+++	-
Seborrhoeic dermatitis...	-	+	++	++	-
Psoriasis	-	++	++	+	-
Psoriasis	-	-	++	-	-
Prurigo	+	++	++	++	-
Prurigo	-	++	++	++	-
Dermatitis venenata ...	+	++	++	++	-
Dermatitis venenata ...	-	++	++	++	-

TABLE III

	V	VI	N	U	Control
Normal individuals ...	-	+++	+++	+++	-
" " ...	-	++	+++	+++	-
" " ...	+	+++	+++	+++	-
" " ...	+	+++	+++	+++	-
" " ...	+	+++	+++	+++	-
" " ...	++	+++	+++	+++	-
" " ...	-	+++	+++	+++	-
" " ...	-	++	+++	+++	-

Proteose obtained from Cases v and vi (serum urticaria), from a normal individual (N), from a case of chronic urticaria of unknown origin (U), were injected intradermally into eight cases of skin disease (Table II) and eight normal individuals (Table III). Proteose dilution, 1 in 10,000; saline control.

TABLE IV.—Proteose Reactions in Asthma Cases

	Proteose							
	P IX	P X	P XI	P XII	P S	P N	P U	P H
Case IX ...	++	+	0	0	0	0	0	0
Case X ...	++	++	0	0	0	0	0	0
Case XI ...	0	0	+++	0	+++	++	++	0
Case XII ...	0	0	0	-	-	-	-	-

P S = Proteose from serum sickness.
P N = " " normal control.
P U = " " urticaria.
P H = " " hay fever.

TABLE V.—Proteose Reactions in Urticarias (XIII and XIV) and Angioneurotic Oedema (XV)

	Proteose					
	P XIII	P XIV	P XV	P A	P H	P S
Case XIII ...	+++	0	0	+	+	0
Case XIV ...	0	+++	0	-	0	+
Case XV ...	+	0	-	0	0	0

P A = Proteose from asthma.
P H = " " hay fever.
P S = " " serum sickness.

TABLE VI.—Proteose and Peptone Reactions in Asthma-Eczema Syndrome (Two Cases) and in Control Cases

	Proteose		Saline	5 per cent. Peptone
	XVI	XVII		
Case XVI ...	-	-	-	-
Case XVII ...	-	-	-	-
Seborrhoeic dermatitis	++	++	-	-
Angioma ...	++	++	-	-
Psoriasis ...	++	++	-	-

HAY FEVER "PROTEOSE" AND OTHER EXPERIMENTS

A solution (1 in 10,000 dilution) of proteose from a case of hay fever was supplied by Dr. Oriel, along with proteose from the urine of a normal individual and a saline control. These solutions were injected intradermally into ten normal individuals and into ten cases of skin disease. In each case an inflammatory reaction developed at the site of injection of the hay fever proteose, while there was no such reaction to the other solutions. The reaction corresponded in time of onset, intensity, and duration with that obtained with the proteoses prepared by ourselves. A case of hay fever was injected with Oriel's proteose. An immediate reaction occurred within five minutes. It consisted of a wheal and surrounding flare of greater intensity than the similar reaction observed in normal subjects with the same solution. The immediate reaction subsided completely in thirty minutes, and was followed by the development of the usual delayed reaction after an interval of three hours. The delayed reaction was of the same nature as that observed in normals, but it involved a somewhat wider area. It subsided within twenty hours.

An attempt was made to secure in normal individuals an exaggerated inflammatory reaction to proteoses from serum urticaria cases by previously introducing, into an area of the dermis, serum from the case in which the proteose had been originally obtained (Prausnitz-Küstner phenomenon). There was no question of producing, by this means, a positive response in a normal skin giving a negative reaction to the proteose, since all the normal skins tested gave a positive response. Exaggeration of response was therefore all that could be looked for, but even this was not obtained.

The positive reactions obtained by us seem to correspond to those described by Oriel and Barber,² commencing to appear after an interval of an hour and three-quarters on an area injected twelve hours previously with the serum of the case from which the proteose had been obtained. Reactions were obtained in cases of serum urticaria and asthma, not only with the homologous proteose, but also with proteose obtained from other similar cases and from normal individuals. Furthermore, proteoses obtained from cases of asthma and serum urticaria produced positive reactions in normal skins. The reaction obtained with the proteoses which we have isolated are therefore non-specific.

COMMENTARY

The proteose supplied by Dr. Oriel from a case of hay fever, and claimed by him to be specific, gave results similar to those produced by our proteoses, with the exception that in the only case of hay fever tested the skin reaction was more severe than in the non-hay-fever subjects. The difference was, however, one of degree and not of kind, and did not support the claim of specificity put forward for this particular proteose.

Four out of twenty-five proteoses isolated by us failed to give any positive reaction whatsoever, but two of these were only tested on 1 case each, and two on 2 cases. Of the remaining twenty-one proteoses from various sources, fourteen gave positive reactions in all cases tested, one in 21 out of 22 cases tested, one in 13 out of 22 cases tested, and five in 1 of 2 cases tested.

As regards the specificity of the reactions, a further difficulty arises, for in two instances proteose isolated from the urine of cases of the asthma-eczema syndrome failed to give a reaction in the patient from whom it was obtained, but produced positive reactions in other individuals. Furthermore, the proteose isolated from a case of angioneurotic oedema failed to produce a reaction in this patient, who, nevertheless, gave a positive reaction

to proteose isolated from a case of urticaria (Table IV). Thus, a total of six proteoses, obtained from conditions specified by Oriel as giving positive reaction to proteose isolated from the homologous urine, failed to give any reaction in the patients from whom they were isolated. This is particularly striking in Cases XII and XV, in which the proteose nitrogen formed a remarkably high percentage of the whole. The peculiarity of "urinary proteose" with regard to the skin seems to lie, not in its specificity in certain conditions, but in its property of producing a local inflammatory reaction of considerable intensity in a proportion of individuals. The significance of this reaction must be interpreted cautiously, and at present no explanation for its occurrence can be offered.

REFERENCES

- ¹ Asthma Research Council: Report of Progress from June 1st, 1930, to October 31st, 1931.
² Oriel, G. H., and Barber, H. W.: *Lancet*, 1930, ii, 231.

ACUTE ASEPTIC MENINGITIS

BY

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Acute aseptic meningitis has for long been known on the Continent, where epidemics of the disease have from time to time occurred. In this country very few cases have been reported. Gibbens¹ has recently drawn attention to the condition, and has given an account of three cases in patients all under 12 years of age. Still more recently Gordon and Abrahams² have described a case of acute aseptic meningitis in a man aged 34 years. The paucity of the literature on this subject prompts me to record the following two cases.

CASE I

A girl, aged 15 years, was sent to the City Hospital on April 13th, 1931, as a case of cerebro-spinal meningitis. On April 9th there was a sudden onset of headache, vomiting, and pains in the neck and legs.

On admission to hospital the temperature was 100° F., pulse 104. The patient appeared ill, and was extremely irritable and restless; lethargy completely absent. There was well-marked rigidity of the neck and back muscles; positive Kernig's and Brudzinski's signs. There was photophobia, a slight squint, and lateral nystagmus. The pupils were equal, and reacted well to light; the fundi were normal. Cranial nerves normal. All reflexes normal. There was nothing abnormal to be found in the circulatory and respiratory systems. There was no enlargement of the liver, spleen, or parotids. The throat was perfectly normal. A throat culture put up on blood-agar was negative for *S. haemolyticus*. There was no family history of tuberculosis. Mantoux test negative.

Lumbar puncture was performed on admission, and 30 c.cm. of opalescent fluid under marked pressure was withdrawn: protein increased, glucose normal, cells—all polymorphs—300 per c.mm. No organisms were found on direct examination or on culture. The Wassermann reaction of the fluid was negative. As the case was thought to be cerebro-spinal fever 25 c.cm. of anti-meningococcal serum was administered. For the following six days the patient ran a remittent temperature.

April 14th.—Patient still very irritable and restless. Severe occipital headache. Marked stiffness of the neck. Lumbar puncture: 30 c.cm. opalescent fluid was withdrawn under marked pressure; globulin increased, sugar normal, cells greatly increased—polymorphs 96 per cent., lymphocytes 4 per cent. No organisms found on direct examination or on culture; 20 c.cm. anti-meningococcal serum given intrathecally.

April 15th.—Condition much the same. Lumbar puncture: 40 c.cm. opalescent fluid withdrawn; sugar normal, globulin increased; cells 300 per c.mm.—polymorphs 80 per cent., lymphocytes 20 per cent. No organisms present.

April 16th.—Patient less irritable and restless. Neck rigidity still present. Kernig's sign positive. Slight occipital head-

ache. Lumbar puncture: 40 c.cm. opalescent fluid obtained under increased pressure; cells increased—polymorphs 60 per cent., lymphocytes 40 per cent. No organisms present.

April 17th.—Headache much easier. Neck less stiff. Kernig's sign positive. Lumbar puncture: 45 c.cm. opalescent fluid withdrawn under increased pressure; cells 280 per c.mm.—lymphocytes 66 per cent., polymorphs 34 per cent. No organisms found.

April 18th.—Patient very much improved. Irritability and restlessness gone. Slight positive Kernig's sign still obtained. Lumbar puncture: 75 c.cm. opalescent fluid withdrawn under increased pressure; 250 cells per c.mm.—lymphocytes 80 per cent., polymorphs 20 per cent.; protein slightly increased, glucose normal. No organisms present.

April 19th.—Improvement maintained. Lumbar puncture: 80 c.cm. opalescent fluid withdrawn under increased pressure; 250 cells per c.mm.—lymphocytes 90 per cent., polymorphs 10 per cent. No organisms found.

April 20th.—No complaint of headache or general pains. Neck free and easily movable. Kernig's and Brudzinski's signs negative. Lumbar puncture: 40 c.cm. slightly opalescent fluid under moderately increased pressure obtained; cells 200 per c.mm.—lymphocytes 92 per cent., polymorphs 8 per cent.; slight increase of protein, glucose content normal. No organisms present. The patient continued to make excellent progress.

April 28th.—Lumbar puncture was done again: the cerebro-spinal fluid was clear and colourless; there were 40 cells per c.mm.—all lymphocytes; there was a slight increase of protein, glucose normal. No organisms were found on direct examination or on culture.

May 4th.—A final lumbar puncture was performed: the fluid was clear and colourless; cells 12 per c.mm.—all lymphocytes. Fluid sterile. A week later the patient was discharged from hospital perfectly fit and well.

CASE II

A boy, aged 5 years, was admitted to the City Hospital on June 27th, 1931, as an observation case of cerebro-spinal meningitis. Previous infectious diseases: measles and whooping-cough. The boy was stated to have been taken suddenly ill on the day of admission, with shivering, headache, and vomiting. On examination the patient appeared ill. He was very irritable and cross, but not in the least drowsy. The temperature was 102° F., and the pulse rate 96. He lay in bed on his right side, with both knees drawn up and fully flexed. There was a moderate degree of neck rigidity. There were well-marked positive Kernig's and Brudzinski's signs. The pupils were equal, and reacted to light. There was no photophobia, nystagmus, or squint; the fundi were normal. No abnormality was detected about any of the cranial nerves. The knee- and ankle-jerks were brisk. There was no disturbance of sensation. The abdomen was a little retracted. The superficial abdominal reflexes were absent. There was no enlargement of the liver or spleen. The throat was normal, and there was no enlargement of the parotid gland. Nothing abnormal was found in the respiratory and circulatory systems. Lumbar puncture, performed on admission, showed slightly turbid cerebro-spinal fluid under very marked pressure; 42 c.cm. were withdrawn; protein increased, glucose content normal; cells greatly increased—all of lymphocytic type. No organisms were found on direct examination or on culture. The Wassermann reaction of the fluid was negative. A tentative diagnosis of tuberculous meningitis was formed.

The following day the clinical condition was much the same—temperature 100° F., pulse 100. Lumbar puncture was again performed. The cerebro-spinal fluid was still under marked pressure, 50 c.cm. of cloudy fluid being withdrawn; the protein content was increased, sugar content normal; cells markedly increased—all lymphocytes. No organisms were present on direct examination or on culture.

On the third day after admission to hospital the patient appeared somewhat better—temperature 100° F., pulse 100. He was less cross and irritable, but still complained of headache. Neck rigidity was still present, though less marked. Kernig's sign remained positive. Lumbar puncture was again performed: 43 c.cm. of opalescent fluid under marked pressure was withdrawn; protein content increased, glucose normal; numerous lymphocytic cells still present. No organisms were found on direct examination or on culture. Mantoux's test