courage. In the Navy, they resent all discipline, shirk all responsibility, and squander their pay in a reckless fashion. A typical reaction was that of a rating who deserted to pay out his wife for some petty quarrel: "I knew she would lose her money while I was adrift," he said. They are drawn from all classes of society, and some of them have ruined excellent opportunities in early life by refusing to stick to anything. Many have been in approved schools, Borstal, or prison—some in all three; a few of them are habitual criminals, having taken to crime as a livelihood; but the majority have not enough stability even for that. It is not surprising that these men, more especially those of the aggressive type, appear in detention again and again, for violence, insubordination, and absence without leave. Under the transient stress of active service they tend to show up surprisingly well. It is not contended that crime is due to some strange disease, of which the psychopathic personality is one aspect: that conception has been abandoned by modern criminologists. On the other hand, it is significant that a very large proportion of civil and Service delinquency appears in those who have pronounced emotional instability. Such cases do not require hospital treatment or invaliding, and I have little faith in psychotherapy in these conditions. No satisfactory solution has been evolved in this country to deal with grossly psychopathic offenders, though special institutions for treating them were included among the measures in the Criminal Justice Bill of 1938. So far as Service delinquents are concerned, an attitude of understanding firmness, combined with careful placing on discharge from detention, is all that can be attempted at the present moment. The American system of heating the punitive furnace seven times for the psychopath does not appear attractive; but, in any case, the American Forces have the advantage over us of accepting no ex-criminals for enlistment. Many and interesting cases might be quoted from our experiences with psychopaths, but the following is an example of the problem which confronts us:

Case 3.—Stoker aged 45. Came from a poor home, but had no family history of crime or mental disorder. He came under the notice of the police at an early age and spent six years in an approved school. Later, he alternated for many years between the Army (which he entered three times, being three times discharged as incorrigible), the building trade (where he rose to be a foreman), and prison. He claimed to have spent ten years all told in prison, sometimes for burglary and once for robbery with violence. His face still showed the marks of razor-wounds received in racecourse gang-fights. At the outbreak of war he volunteered for the Navy without considering what that might entail; he soon found the life too arduous, and, without ever setting foot on a ship, disappeared. Three times he repeated this conduct, giving trivial and absurd excuses on each occasion. On examination he was the typical "old lag"—cheerful, plausible, and apparently friendly. His attitude while under sentence varied from a fawning subservience to truculence and open hostility. His general educational level was fair and his intelligence average. His disposal might have caused a serious problem, but he was found to have a high blood pressure, a trace of albumin in his urine, and his retinal vessels showed arteriosclerotic changes. At the conclusion of his sentence he was invalided on account of hyperpiesis.

Comparison with Civil Delinquents

It is hard to find an exact parallel between Service and civil delinquents, as so much Service "crime" is of a purely technical nature. A man may have no wish to be considered abnormal, and yet fail to see the necessity for returning when his leave is up or for staying awake on watch. Civil crimes are usually those of commission, Service offences of omission.

	Civil Prisoners	Service Offenders
Family history of epilepsy	4.8%	10.0%
Family history of insanity, neurosis, or mental deficiency	10.9%	9.6%
Psychosis	7.5%	0.2%
Defective	3.3%	0.6%
Backward	14.1%	5.9%
Epileptics	5.5%	0.5%

The only comparable set of figures with which I am acquainted is that of East (1942) in his investigation of 4,000 young delinquents at Wormwood Scrubs; his cases varied in age between 16 and 20. The present series deals with a rather

higher age group, varying between the extremes of 17 and 46, though the average age was 23½.

With regard to the above comparison, it must be remembered that civil prisons must take all comers, whereas the armed Forces impose a considerable degree of selection on their intake. It will be seen, however, that the same kind of psychiatric investigation is required, whether in a civil or Service environment, when dealing with gross or repeated forms of delinquency.

Summary

The possibilities of psychiatric investigation and treatment of delinquents in Service detention establishments are discussed. It is suggested that the role of the ordinary medical officer is that of diagnosis, leaving treatment to be carried out elsewhere after discharge from detention.

It is shown that of a series of 1,000 Naval offenders who were briefly investigated 22.7% proved to be mentally abnormal.

The various types of abnormality seen in detention are briefly described, with a suggestion as to the bearing that those abnormalities have in promoting offences. A comparison between civil and Service delinquency is added.

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PROTEOLYSED BEEF IN THE TREATMENT OF COELIAC DISEASE

BY

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The importance of a diet rich in protein is well recognized in the treatment of coeliac disease and related conditions characterized by chronic jejuno-ileal insufficiency. The period of maximum incidence of coeliac disease is between the first and third years. The protein requirements per unit of body weight at this time of life are approximately twice that of an adult, while the ability to digest protein foods in infancy has an upper limit proportionately lower than in the adult. In coeliac disease gross impairment of the powers of absorption of the products of digestion, relating particularly to those of fat and protein, is superadded to the requirements and limitations already mentioned. These considerations, together with the apparent failure of any previous form of treatment to effect improvement in one of the cases reported, suggested to one of us (A.C.A.) the possibility of ensuring a high protein intake by the oral administration of proteolysed beef. The suggestion was therefore adopted, with encouraging results.

Our purpose is to present this method of treating coeliac disease. It should be made clear from the beginning that this line of therapy is based on the desideratum of a high protein diet in coeliac disease, and is on no account to be regarded as a substitute for or a replacement of the other accepted general principles of the treatment at present adopted for this condition; nor is it claimed that the striking progress observed in one of the two cases reported was brought about by this particular form of treatment. It is recognized that the natural history of coeliac disease could itself account for the improvement that took place, and that the part played by skilful nursing, a low-fat diet, and a high vitamin intake was no doubt important in determining this improvement. The method is therefore put forward on the grounds of having a rational and scientific basis and possessing distinct advantages over other methods of ensuring a high protein intake in the treatment of this disease. Finally, it is hoped these advantages, together with the freedom from technical difficulties in the preparation of proteolysed beef, will be considered of sufficient merit to promote further and more extensive clinical trials.

Method of Preparation of Proteolysed Beef

The method used for the preparation of the material is a modification of that described for the proteolysis of liver by Davis *et al.* (1943). Six pounds of minced lean beef are placed in a steam-pan together with 15 g. of papain and 100 oz. of water. The mixture is heated to 60° C. and maintained at this temperature for three hours. The material is then raised to 100° C. and vigorously boiled for 10 minutes. The hot digested mixture is strained through cloth, cooled in a refrigerator, strained to remove residual fat, and the volume adjusted to 6 pints with water. The resulting clear solution is stored in a refrigerator, and one pint for each patient issued to the ward daily.

Advantages of Proteolysed Beef

(1) Proteolysed beef yields in concentrated solution first-class protein in the form of easily digested and assimilable peptones, polypeptides, and amino-acids. (2) The digest is free from indigestible and particulate matter such as fibrous tissue. (3) Being reduced to a small volume (20 oz.), the equivalent of 1 lb. of beef a day can be taken by a young child over an indefinite period, whereas the use of a similar quantity of predigested beef would not be feasible. (4) Proteolysed beef is not unpleasant to the taste, and resembles broth; but what is more important is that it is taken readily and sometimes eagerly by young children. (5) The absence of serious technical difficulties renders the routine preparation of the digest a practical proposition in any hospital possessing a well-equipped dispensary.

Method of Administration of Proteolysed Beef

The digest keeps satisfactorily for 5 days if stored in a refrigerator. This allows of not too frequent preparation as well as of keeping a ready supply in the ward. Being in liquid form and of the consistency of broth, proteolysed beef is most conveniently given to young children as a 5-oz. drink, to be taken with the main meals and in the mid-morning or at afternoon tea. It may be given hot or cold; on the whole the former is preferred by the patients. Although to give four cups of soup of doubtful brew sounds a wearisome gastronomic routine—as it would be to most adults—this does not appear to be the case with young children. Both the patients whose cases are reported took the digest readily from the beginning, and rarely refused feeds, even after nearly 12 months' continuous administration. During exacerbations, when abdominal distension and vomiting were pronounced, the feeds were sometimes refused. It has usually been found, however, that when for any reason the digest was refused other forms of nourishment were likewise rejected. During all except the most severe intercurrent illnesses the feeds were continued. A number of other children in comparable age groups and suffering from different complaints were given the digest for short periods without difficulty.

Feeding with proteolysed beef contrasted most favourably with a 9-weeks period during which bananas were given to the older patient. The "banana course" was concluded a week before the proteolysed-beef therapy was begun, and was, by comparison, a dismal failure. The patient showed a dislike for bananas from the beginning, however cunningly they were prepared or camouflaged; she had to be watched while she ate them, and even with this precaution managed on occasion to secrete them under the pillow or among the bedclothes. In short, no detectable benefit accrued from the feeding with bananas in this case, while much inconvenience was caused to both patient and nursing staff. In regard to difficulties or disadvantages in the administration of proteolysed beef there is nothing to be said, for none were encountered, even after nearly 12 months.

Report of Two Cases

Case 1.—A girl aged 3½ years was admitted to Southend General Hospital on June 10, 1942. She had been healthy and robust until her second year, when the passage of frequent and offensive frothy motions associated with abdominal distension and progressive loss of weight set in. Deterioration in her condition had been steadily progressive, so that on admission she weighed only 18 lb. 13 oz., whereas at the age of 18 months her weight was 24 lb.

Examination revealed a typical picture of advanced coeliac disease; marasmus extreme; eyes sunken and dehydration marked. The

abdomen was only moderately distended, but, together with a relatively normal face, contrasted sharply with a wasted, shrunken, and under-developed body. The stools, not more than three in 24 hours, were fluid, yellow, and offensive. Dehydration was overcome by rectal glucose-saline, while the standard treatment* was gradually introduced towards the end of the second week. During this period her weight increased by 3 lb., chiefly owing to fluid retention; for a nutritional type of oedema developed in the lower extremities. **Blood count:** Hb 82%; C.I. 0.88; W.B.C. 16,000, with a normal differential count. Progress remained slow and uncertain, a gain in weight one week being offset by a loss the next. Large offensive stools averaged three in 24 hours, while bouts of vomiting, with gross abdominal distension and much flatulence, occurred every few days.

Nov. 11, 1942: Ascites developed for no apparent reason. Weight 23 lb. 8 oz. **Nov. 19:** Developed lobar pneumonia, successfully treated by chemotherapy. Ascites subsided spontaneously during this illness. **Nov. 23:** Weight 17 lb. 4 oz. **Dec. 3:** Otitis media, with purulent discharge from left ear. Hb 67%; C.I. 0.8; W.B.C. 7,850, with normal differential count. **Jan. 1, 1943:** Critically ill for two weeks with dysentery. Weight 23 lb. 8 oz. *B. sonnei* cultured repeatedly from stools until **March 1.** Weight 20 lb. **March 19:** Developed tetany, with carpo-pedal spasm, and much pain; relieved by calcium gluconate intravenously, but persisted in latent form for one week. Blood calcium 6.3 mg. per 100 c.cm. Radiographs showed gross generalized rarefaction of bone. Weight 22 lb. 8 oz. **April 1:** Bananas added to diet (three daily) for 9 weeks; taken only with difficulty and persuasion. Bowel actions two per 24 hours, but vomiting became more frequent during this period. **May 5:** Neohepatex 4 c.cm. intramuscularly weekly for 10 doses. **June 22:** Bananas discontinued. Weight 21 lb. 12 oz.

June 29 (Proteolysed-beef therapy begun): Weight 21 lb. **July 25:** Weight 20 lb. 4 oz. **Sept. 26:** Weight 21 lb. 3 oz. **Oct. 11:** Vitamin K 5 mg., D.O.C.A. 5 mg., riboflavin 1 mg., and nicotinic acid 50 mg., given intramuscularly daily for one month. Weight 20 lb. 5 oz. **Nov. 11:** Parenteral vitamins discontinued. Weight 21 lb. **Jan. 30, 1944:** Weight 21 lb. **Feb. 8:** Massage and bed exercises begun. Weight 23 lb. **March 1:** Able to sit in chair. **March 11:** Fell from chair, sustaining a subperiosteal fracture of right humerus. **March 14:** Developed alveolar abscess, treated by tooth extraction. Bowel actions 1 to 2 per 24 hours. Motions semi-solid and less offensive; vomited once in four weeks. Weight 27 lb. **April 17:** Able to walk with assistance. Weight 31 lb. 4 oz. **May 11:** Fell, sustaining subperiosteal fracture of right tibia. Bowel actions 1 to 2 per 24 hours. No vomiting for 7 weeks. **June 1:** The child, fresh-complexioned, looks healthy, and, apart from a distended abdomen, is normally proportioned, although considerably undersized for her years (5 years 5 months). She is precocious and cheerful, and in spite of deficient education is remarkably intelligent. Weight 35 lb. **Examination of faeces:** Total fat content, 29.7% of dried faeces, 6.6% being in neutral form and 23.1% split fat. **Blood count:** Hb 70%; R.B.C. 4,140,000; C.I. 0.8; W.B.C. 6,850, with normal differential count.

Case 2.—This patient, a boy aged 17 months, was admitted to Southend General Hospital on July 6, 1943. He had been a healthy infant until 6 weeks previously, when anorexia, with loss of weight, frequent bowel actions, and recurrent abdominal distension, made an appearance. Vomiting was not a feature.

On examination he was considerably wasted, especially about the buttocks and lower limbs; face pale and bloated; pot-bellied, with umbilicus everted. Weight 16 lb. 8 oz. **Blood count:** Hb 76%; C.I. 0.8; W.B.C. 7,500, with normal differential count. Blood calcium 9.8 mg. per 100 c.cm. Examination of dried faeces showed total fat content of 46.7%, 3.2% being in neutral form and 43.5% split fat. The standard treatment* was at once started, and 1 pint of beef digest included in the diet daily.

July 20: Bowel actions 3 per 24 hours; motions yellow, fluid, and offensive. Bouts of abdominal distension and vomiting occasional. **Aug. 8:** Bowel actions 2 per 24 hours. Weight 17 lb. 8 oz. **Sept. 20:** Weight 16 lb. 8 oz. **Oct. 20:** D.O.C.A. 5 mg., riboflavin 1 mg., and nicotinic acid 50 mg. given daily for one month intramuscularly. **Nov. 11:** Developed acute mastoiditis: treated by operation. Parenteral vitamins discontinued. **Dec. 20:** Weight 17 lb. 4 oz. **Jan. 1, 1944:** Weight 18 lb. **Feb. 8:** Massage and exercises begun; able to stand in cot. Weight 18 lb. 4 oz. **June 1:** Child shows marked improvement. He is lively, happy, and has a good colour. Although thin and undersized, he is by no means wasted. The abdomen is still prominent, but bowel actions have averaged 1 a day for over a month, while the motions are formed. Vomiting has ceased completely. Weight 22 lb. 4 oz. **Examination of dried faeces:** Total fat 31.3%, 5.8% being in neutral form and 25.5% split fat. **Blood count:** Hb 71%; R.B.C. 3,730,000; C.I. 0.9; W.B.C. 12,550, with normal differential count.

* This consisted of a graded fat-free diet with the addition of the following, which were given daily: vitamin D, 6,000 units; nicotinic acid amide, 100 mg.; ascorbic acid, 100 mg.; vitamin B₁, 6 mg.; iron sulphate, gr. 6; calcium lactate, gr. 30.

Summary

A method for ensuring a high protein nitrogen intake in the treatment of coeliac disease and allied conditions by the oral administration of proteolysed beef is described.

Details of the method of preparation of the digest, which can be satisfactorily carried out in any well-equipped hospital dispensary, are given.

Two cases of coeliac disease treated daily with proteolysed beef for 11 months and 10 months, respectively, are reported.

It is hoped that the new method, which is based on the principle of the need for a high protein diet in coeliac disease, will stimulate further clinical trials.

We wish to thank Dr. R. Sleigh Johnson, under whose care the patients were admitted to hospital, for permission to publish the case notes, and for his helpful criticism of this paper.

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A FRACTURE-DISLOCATION OF THE ANKLE OCCURRING IN FLYING ACCIDENTS

BY

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Fracture-dislocations of the talus, which before this war were comparatively rare injuries, have become more common as a result of accidents to Service aircraft. It is the intention to describe a typical fracture-dislocation of the ankle, occurring in such accidents, in which the talus bears the brunt of the injury, the manner in which it is produced, and the different kinds of treatment employed.

Description.—The fracture line is irregular and extends obliquely through the neck of the talus; the fragments are widely separated; the head of the talus remains *in situ*, but the body is expelled from the ankle-joint and is rotated around its longitudinal axis through 90° (Fig. 1). The injury is not com-

FIG. 1.—Showing the typical fracture-dislocation.

pound. Whereas in posterior dislocations of the talus fracture of a malleolus is held to be an inevitable accompaniment, in this fracture-dislocation the same contention is not valid.

Manner of Production.—It is necessary here to mention a principle of airmanship: when a pilot in a single-engine aircraft is forced to make a crash-landing, before the moment of impact with the ground he puts on either the right or the left rudder. The purpose of this act is to minimize the danger from the engine, which will be dislodged backwards relatively when it strikes the ground. The turn so induced by the rudder increases the chances of the dislodged engine passing to one or other side of the pilot; but it also happens that the engine comes against the rudder-bar, which is pushed forward. The blow is severe enough to dorsiflex the foot beyond its limit and also to force it proximally so violently that the anterior margin of the lower articular surface of the tibia, which impinges against the neck

of the talus, is driven through it; the ankle-joint is deranged and the body of the talus is dislocated posteriorly and rotated about its longitudinal axis.

Diagnosis.—This can be made with certainty only by radiographic examination; but with a knowledge of the history of the injury the provisional diagnosis of a fracture-dislocation of the talus is reasonable.

Treatment

Treatment is to be looked upon as urgent. The talus derives its nutrient vessels by way of the anterior ligament of the ankle-joint for the head and neck and by way of the posterior and lateral ligaments for the body. In this fracture-dislocation the blood supply to the body is cut off and avascular necrosis follows. This has a most important bearing upon treatment.

Reduction.—Closed reduction of the dislocated body, if at all feasible, is extremely difficult. Reduction, therefore, if attempted, should advisedly be open. The foot is then put up in plaster-of-Paris in extreme equinus for at least four weeks, when the sutures are removed, after which the plaster is continued for a further 16 weeks or more with the foot at a little less than a right angle. Care must be taken to ensure that separation of the fragments does not take place while this is being done. Although regeneration of the body after avascular necrosis might follow accurate reduction and prolonged immobilization, degeneration of its articular cartilage in the ankle-joint and in the subtaloid joint will occur, to produce a painful and crippling arthritis.

Partial Talcotomy.—This is removal of the displaced body only (Fig. 2). To remove only the body of the talus is not advised. The head remains *in situ*; but the foot as a whole moves proximally, and the head of the talus comes to lie anteriorly to the lower end of the tibia. Backward displacement of the foot is prevented; there is no heel to speak of, and any dorsiflexion that the false joint permits is extremely limited. There is unnecessary painful friction between the anterior margin of the lower articular surface of the tibia and the fractured surface of the head of the talus. Nevertheless, the patient is able to walk several miles, and for a while even to dance after a fashion, with only a modicum of pain and disability. Arthritic

FIG. 2.—Showing the talus removed.

pains develop and worsen with time. Shortening of the limb by about three-quarters of an inch, and stiffness, produce a marked limp. When the operation wound has healed, a surgical boot with a leg-iron must be worn to allow the deep tissues to consolidate. After 16 weeks the leg-iron is dispensed with, and surgical footwear which allows for the dropped malleoli and almost absent heel is fitted.

Talcotomy.—If talcotomy is the treatment of choice, a comparatively satisfactory result may be obtained if it is performed with the care and attention to detail which are exercised by Laming Evans. The depreciation of this operation is in large measure due to inadequate surgical technique, which can render the results of a badly performed talcotomy irreparable. Again, surgical footwear is necessary to allow for the prominent heel; but much of the limp can be overcome by making the sole and heel about 1½ in. thick, and in conformity with the design of