ment of such a case, a procedure which is little less than a crime. Such a sacrifice deprives the broken phalanx of an ideal splint and exposes a singularly tender area which will not permit of a return to work for some weeks. In order to save the nail and at the same time to relieve the tension and therefore the pain, it is a simple matter to trephine the nail: a little patience and a sharp operating knife are all that is required. The trephine opening need not be more than 2 mm. in diameter, and should be placed over the most prominent point of the haematoma. With this simple manoeuvre the relief is dramatic as soon as the free blood is released. Vaseline ribbon gauze 3/4 in. wide is applied to the toe, and when the fracture is confined to the distal phalanx a plaster-of-Paris thimble enclosing the whole toe provides adequate immobilization. When, however, the proximal phalanx is fractured a plaster toe-splint is fashioned to enclose the sides and plantar surface of the toe; this extends along the medial surface of the foot to about the tubercle of the navicular bone and across the sole of the foot for about half its breadth. The splint is either bandaged or strapped in place. The vaselined gauze lubricates the inside of the plaster and allows an easy and painless removal of the splint. Failure to do this can result in the most tedious and painful task, especially when the blood has leaked under the plaster.

It was always our custom to admit these cases to hospital for 48 hours, with immediate elevation of the limb, and we found that the comfort in each and every case was great. It may be argued that admission to hospital is quite unnecessary. This may be so providing the patient goes home by ambulance and assumes a recumbent attitude with elevation of the limb. Owing to the comfort induced by plaster immobilization and the trephining, these instructions are not always carried out, and treatment in hospital, when space permits, we found more desirable.

The patient is allowed up on the third day, when, by borrowing a boot about two sizes larger than his own, he can accommodate a thimble; the stout leather sole, being unyielding, prevents movement of the toe. The larger plaster sole-splint cannot be accommodated inside an ordinary boot, but it can almost invariably be abandoned for the plaster thimble. The patient is encouraged to use heavy working boots, and by the eighth to the tenth day he may return to work. This date is, of course, variable; sometimes a fracture causes so little incapacity that a return to work on the following day is possible. On the other hand, severely comminuted fractures or grossly lacerated soft tissues will demand a longer incapacity period. This short period of immobilization will not cause any stiffness of the metatarso-phalangeal joint, mobility of which is so essential for comfortable walking.

As with compound injuries of fingers and thumb, conservation of tissue is the great aim. Such aim is no less applicable in the case of the great toe. Excision and débridement are carried out in the same manner as in other compound fractures. When the great toe is severely mutilated and amputation is deemed advisable, preservation of the metatarso-phalangeal joint must always be the goal. The importance of this joint is not always realized, and the simple operation of disarticulation is too often undertaken. Following this procedure, the late result of pain while walking forward on the tread, which entails pressure on the antero-inferior aspect of the metatarsal head, causes many weeks of disability. Where possible a small portion of the proximal phalanx should be left to maintain the integrity of this very important joint. It is almost unnecessary to state that the head of the first metatarsal must be preserved at all costs, because it, together with the remaining metatarsals and the os calcis, forms the tripod on which the weight of the body is borne.

Conclusion

To summarize, the points I wish to make are: (1) trephine and save the nail; (2) plaster-splint, with elevation, for 48 hours; (3) encourage use of a heavy boot during convalescence; (4) condemn disarticulation at the metatarso-phalangeal joint.

Again my thanks are due to Mr. H. Ernest Griffiths for his guidance and encouragement in this and many other matters relating to traumatic surgery.

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Medical Memoranda

Bilateral Fracture of the Patella

The following case of fracture of both patellae, treatment of which had an interesting sequel, may be thought worthy of record.

CASE HISTORY

Private A. was admitted to a general military hospital on Aug. 21, 1942, complaining of pain in both knees. At 2 a.m. he had been returning from a dance, travelling as a "passenger" on the crossbar of a bicycle. While descending a steep hill his "pilot" attempted to take a sharp right-hand bend at speed, but at the crucial moment the brakes failed and the bicycle crashed into a stone wall. Private A., by reason of his posture, took the brunt of the impact on his flexed knees.

I examined him at 9.30 a.m. I found a well-developed intelligent youth of some 18 years. He had several abrasions on the knees, both of which were much swollen. The legs were held in extension and any attempt at flexion of either caused severe pain. He volunteered the information that his legs "wouldn't hold him up" after the accident. Shock was entirely absent.

Operation.—Radiographs revealed fractures of both patellae; the right was grossly comminuted, and displacement was severe; the left was a "cruciate" fracture, and displacement was not marked. I decided to remove the right patella. Owing to the multiplicity of dirty abrasions great caution was exercised in preparing the skin, and operation was finally fixed for Aug. 27. Under general anaesthesia the fracture was approached through a midline vertical incision. On separating the fragments an enormous haematoma under pressure was evacuated. Loose fragments were removed and the upper and lower fragments dissected free from the quadriceps tendon. The free ends of the latter were then bunched together with mattress sutures of No. 3 catgut in the manner described by Watson-Jones (1941). The wound was closed and a compression bandage applied. Attention was then directed to the left knee, and it was found that the displacement was easily corrected by direct pressure against the femoral condyles. A mid-thigh plaster cast was applied.

Post-operative Measures.—During the immediate post-operative phase severe pain in the right knee required the frequent use of sedatives, and on the third day transient swelling of the right ankle necessitated slight relaxation of the compression bandage and elevation of the limb, with immediate benefit. The left limb was trouble-free. Stitches were removed on Sept. 5, the wound being soundly healed. Active exercises were begun cautiously on Sept. 7, and the following day the patient was allowed out of bed in a wheelchair. From this time onwards he showed excellent co-operation, and persisted tenaciously at his exercises. The plaster was removed from his left leg on Sept. 21 and he was allowed to bear weight. Radiographs taken on Sept. 28 showed firm union of the left patella in good position; the right knee was clear of fragments and there was no new bone formation. He was discharged on 14 days' convalescent leave.

End-result.—The patient was readmitted on Oct. 15 for a course of physiotherapy, and was finally discharged to duty on Dec. 2. I made a "follow-up" examination on March 19, 1943. He was then in excellent health and spirits. Examination of the right knee showed the wound firmly healed, with painless flexion up to 140 degrees. The left patella was firmly united; the articular surface was smooth, and flexion was possible up to 150 degrees. The patient then volunteered the interesting information that, although naturally left-footed, he now found the right knee not only stronger than the left but also stronger than it had ever been previously. He added that he had no trouble whatsoever with the right knee, but that he got occasional twinges of "rheumatism" in the left knee, especially in frosty weather or after prolonged marching. He referred this pain to the ligamentum patellae. Both quadriceps were equally re-developed, but tests revealed that the right was undeniably now the more powerful. The efficacy of the "bunching" method of suturing the quadriceps tendon was strikingly demonstrated by the fact that the contours of both knees were indistinguishable.

I have to thank the Director of Medical Services and the Command Medical Officer, Southern Command, for permission to publish this case.

JOHN J. MURPHY, M.B., B.Ch.,
Captain, A.M.S.

Cork, Eire.

REFERENCE

Watson-Jones, R. (1941). *Fractures and Other Bone and Joint Injuries*, p. 547, Edinburgh.

Unusual Case of Obstruction by Worms

The following case may be considered interesting enough to merit publication.

CASE HISTORY

On March 4, about 1.30 a.m., I was called to a child aged 5 years who had become ill on the previous morning. She then complained of abdominal pain and vomiting. This got worse towards night, and she was sent to Nenagh General Hospital. Appendicitis was a suggested diagnosis. On examination the child was restless; her temperature was normal, pulse 100, and respirations 26. She had general abdominal discomfort, most marked about the umbilicus. There was no definite rigidity. Restlessness was the most pronounced feature.

She was operated on that morning about 10.30 o'clock, the anaesthetic used being open ether administered by Dr. Mary Ryan of Nenagh. When the patient was asleep a very distinct and rather large swelling could be felt in the lower abdomen and slightly to the right of the umbilicus. This felt like a possible intussusception. The abdomen was opened by a lateral incision over the appendix and the mass delivered through this opening. It consisted of small intestine, which was under very great tension for an extent of about nine or ten inches. It was bluish, and evidently the obstruction was due to a mass inside and not to an intussusception. The intestine had a rope-like feeling, and at one point what looked like the outline of a long worm was firmly compressed against its wall. I opened the intestine at this point and found that it was packed so tightly with worms that the loops of three or four at once bulged through the incision, which was only three-quarters of an inch long. I drew these out with a tissue forceps, and in a couple of minutes had removed 66 full-sized roundworms. This relieved the obstruction, and although it was now evident that there were other worms in the intestine I closed the incision by two layers of catgut sutures. The child was restless and ill that night, her temperature being 100° and her pulse 148. After that she made a complete and uninterrupted recovery, except for a slight cold which remained a few days. Her temperature was normal on the fourth day and did not again pass 99°. After a week she was given five 2-gr. santonin powders at two-day intervals, when she passed 13 further worms. The child returned to her home on April 2 in very good health.

COMMENT

Notwithstanding the large number of worms which are occasionally found in children, I feel that 79 must be extremely high. The comparatively good health which the child enjoyed before her acute attack is also, I think, rather remarkable in view of the severe symptoms frequently caused by the presence of two or three worms in a child of that age. I have to thank Dr. Ryan for an excellent anaesthetic.

Nenagh, Co. Tipperary.

A. D. COURTNEY, M.B., B.Ch.

Macrocytic Anaemia following Partial Gastrectomy

Macrocytic hyperchromic anaemia is a rare sequel of operations involving removal of stomach tissue, and has been described as following total as well as partial gastrectomy (see Gordon-Taylor *et al.*, 1929; Rowlands and Simpson, 1932; Hartfall, 1934). Such operations are probably more often followed by a hypochromic "secondary" type of anaemia (Vaughan, 1932; Hartfall, 1934; Joll and Adler, 1942). As only about a score of well-authenticated cases of anaemia of the macrocytic hyperchromic type as a result of partial gastrectomy have been recorded we consider the subject to be of sufficient interest to publish details of a further example of the condition, which responded to injections of liver extract.

CASE RECORD

The patient, a woman aged 61, gave a history of having had an operation for perforated gastric ulcer 30 years before. She had had a partial gastrectomy performed 15 years ago, when three-quarters of the stomach was removed. A few months before admission to our hospital she complained of pallor and some oedema of her legs.

On examination she was pale, there were signs of chronic bronchitis, and the epigastrium was slightly tender. A blood count (Nov. 4, 1942) showed the presence of a macrocytic hyperchromic anaemia: Hb, 33%; R.B.C., 1,410,000; C.I., 1.2; mean cell diameter, 8.2 μ ; mean corpuscular volume, 116 cubic μ ; reticulocytes, under 1%; no increase in B.S.R.; W.B.C., 3,200—polymorphs 64%, lymphocytes 36%. As has been described in similar cases, the indirect van den Bergh was negative and the serum was not icteric. A fractional test meal showed achlorhydria, with presence of bile in all specimens. The stools did not contain occult blood. A sternal puncture carried out before the administration of liver showed a typical megaloblastic marrow: myelocytes, 15.75%; metamyelocytes, 2%; basophils, 0.25%; eosinophils, 2.5%; polymorphs, 5.25%; lymphocytes, 2.25%; plasma cells, 1.5%; proerythroblasts, 0.75%; early megaloblasts 13%, intermediate megaloblasts 40.5%, late megaloblasts 16.25% (total megaloblasts, 69.75%).

On the basis of the examination of the peripheral blood and the sternal marrow a diagnosis was made of macrocytic anaemia of pernicious type, following partial gastrectomy, and appropriate treatment with liver extract and iron was started. With this therapy the condition gradually improved, and on Feb. 10, 1943, the haemoglobin percentage was found to be 90 and the red cell count 4,900,000 per c.mm.

We wish to thank Dr. A. D. Rope for allowing us to publish details of this case.

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Reviews

SURVIVORS FROM SHIPWRECK

Shipwreck-Survivors: A Medical Story. By Macdonald Critchley, M.D., F.R.C.P. (Pp. 119. 7s. 6d. London: J. and A. Churchill, 1943.

Our great seafaring tradition has been painfully built upon the sacrifices and sufferings of generations of our sailors, and at no time have the stresses of exposure and tribulation been borne with such consistency and to such an extent as to-day. Yet there has always been an unfortunate lack of medical interest in these problems, which we may hope Surgeon Capt. Macdonald Critchley will succeed in rectifying by his admirable little book. He attributes this neglect largely to the increasing rarity of accidents in peacetime, yet shows that although such disasters as the loss of the *Titanic* aroused enormous general interest they never held medical attention. Such neglect has become intolerable at the present time, and it behoves our profession to place its accumulated experience and physiological knowledge humbly at the disposal of the Royal and Merchant Navies in order that some of the elemental hardships may be prevented and others of them assuaged. In this spirit Critchley offers his own contribution. It is indeed a grim story he has to tell; surely never have the depths of human infamy and the heights of human courage and endurance been shown in sharper contrast. Nor is it the courage of ignorance, for many men have endured these trials not once but many times, yet have not faltered.

The author presents his material under the headings of the effects of cold, thirst, hunger, and tropical conditions. He then describes the state of the survivors at the time of rescue, and discusses the psychological aspects of their experiences. Finally he considers methods of mitigation of risks and treatment in general. He succeeds in painting a graphic picture in the small compass of 112 pages, aided by photographs of poignant interest. The longest recorded survival on a float is 3½ days, on a raft 48 days, and in a lifeboat 70 days, though lifeboat voyages of more than three weeks are exceptional. Indeed, if a lifeboat is not picked up within 24 hours there is still a 50% chance of being rescued within five days. Other conditions being equal, large persons stand immersion better than small, since they have a lower ratio of surface area to mass. The tendency of the exposed men to fall asleep in a flexed position should not be regarded or treated as a dangerous complication, for it is comparable to hibernation. When the body warms up after rescue severe pain is felt in the feet, which may not develop for several days, when it becomes persistent, reaching its acme during the second to the fourth weeks. It is worst at night and is increased by any pressure. Naturally, ulcers and gangrene may ensue. A table is given of the symptoms compared with those of trench foot and frost-bite, showing much more prolonged after-effects from "water-bite." Thirst is, after cold, the most distressing and dangerous hardship, and the disastrous results of trying to alleviate it by drinking sea-water are well known. Food is of very secondary importance, for adequate water supply is the dietetic factor which will determine survival, and the limited stowage space within life-saving contrivances could be more fruitfully devoted to water than to food would the layman but realize it. On physiological grounds there is a case for advocating fats, and especially carbohydrates, to the virtual exclusion of proteins. The severe cold of the North Atlantic may overwhelm a man in a comparatively short time, whereas in a hot climate a high morale will triumph over the greatest physical hardships. Anything up to two weeks in a boat is then borne well, despite minimal food and water. In the Tropics a 50% survival rate has been recorded after almost entire submersion for 32 days. Blistering, salt-water burns, and boils, and even gangrene, may occur, and the risk from carnivorous fishes is by no means negligible, though the dreaded shark is really less deadly than the "tiger fish."

On rescuing, the survivors will probably present a macabre picture wherein shock, cold- or heat-prostration, emaciation, dehydration, local tissue destruction, or focal infective lesions are conspicuous. Almost certainly a mental reaction will be present—whether of simple relief or excited elation—it may well be with a background of confusion, mild delirium, apathy,