Aub, Fairhall, Minot and Retznikoff,[5] the administration of a high-calcium diet, augmented by calcium lactate by mouth, or calcium chloride intravenously, rapidly removes the lead from the circulation and concentrates it in the bones. By this means the acute phase of the intoxication is easily controlled. Later on, when the acute symptoms have subsided, elimination may be proceeded with. This is accomplished by altering the pH of the blood, either by administration of acid or alkali; the same workers have shown that the combination of an acid salt (ammonium chloride) with a low-calcium diet gives the best results.

It is sometimes argued that if the lead can be satisfactorily stored in the bones, it should be left there, and the patient kept on a high-calcium diet or in a so-called positive calcium balance. As it has been so clearly shown experimentally, in addition to the clinical knowledge, that an acidosis may suddenly release into the circulation large quantities of lead, this temporizing may have serious results. In carefully controlled adults, theoretically, such a stand may be justifiable, but the frequency of acidosis in children, occurring either independently or in association with their many infections, leads one to feel that it is wiser to proceed with elimination of the lead in a quiescent interval than to run repeated risks of acute saturnism.

References

1. Park, Jackson and Kajdi, *Am. J. Dis. Child.*, 1931, **41**: 485.
2. Vogt, *Am. J. Roentgenol. & Rad. Therap.*, 1930, **24**: 550.
3. Vogt, *J. Am. M. Ass.*, 1932, **98**: 125.
4. Pirie, *Am. J. Roentgenol. & Rad. Therap.*, 1930, **24**: 147.
5. Aub, Fairhall, Minot, Retznikoff, *Medicine Monographs*, 1926, **7**: 265.

REGENERATION OF THE DISTAL PHALANX

By L. H. McKim, M.D., C.M., F.R.C.S. (C.)

Montreal

IT has been known for many years that the distal phalanx is able to regenerate following the removal of the diaphysis for osteomyelitis which has not involved the proximal, or epiphyseal, portion of the bone, or the interphalangeal joint. The number of cases, however, in which amputation is performed following osteomyelitis of this bone leads one to suspect that this ability to regenerate has either been forgotten by many of us, or that it has never been sufficiently emphasized. In this connection it is felt that the following case presents sufficient interest to warrant its presentation.

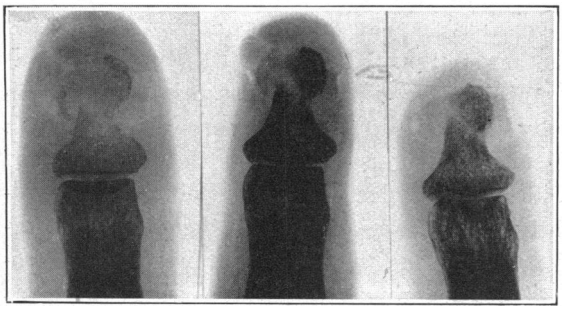
Case History

Dr. G. S., a House Surgeon of the Montreal General Hospital, received a slight injury by accidentally pricking the tip of the right middle finger with a safety pin on December 29th, 1930. He left for his home at some distance the same evening. A few days later the tip of the finger became inflamed, and, on his return to Montreal on January 6th, 1931, he was found to have a deep-seated felon with pus pointing beneath the nail. The finger was incised, but it was found that considerable damage to the bone of the distal phalanx had already occurred. The infective process did not subside, and on January 21st, x-ray examination showed that sequestration of the diaphysis had occurred. The interphalangeal joint, however, appeared to be intact. Operation was performed the following day, the diaphysis being removed. The cavity was swabbed out with alcohol and tightly packed with iodoform gauze soaked in sterile liquid paraffin. The inflammatory process promptly subsided, and on removal of the packing, four days later, a clean granulating cavity was found. The cavity was filled with liquid paraffin and its walls allowed to collapse. As the swelling of the finger subsided an attempt was made to mould the distal portion to its proper shape by means of adhesive strapping. X-ray examination, made on February 13th, showed that very definite bony regeneration was occurring. The moulding of the finger by means of adhesive straps was carried out at dressings done every three to six days. The finger was completely healed, so far as external appearances went, in about four weeks from the date of operation. X-ray examinations were made at intervals of three to four weeks for a number of months, to show the rate of bone formation. The finger was sufficiently firm to permit of some use in about five or six weeks. About March 5th he sustained a fracture through the newly formed terminal phalanx from too active use of the finger. This fracture is shown in x-ray dated March 6th, 1931. It healed promptly and without discomfort. The final x-ray examination was made August 11th, 1931. At this time the finger was causing practically no inconvenience. The nail had grown to about one-half its former length and the finger, although slightly shorter in its distal phalanx, was functionally almost as useful as formerly.

Fig. I

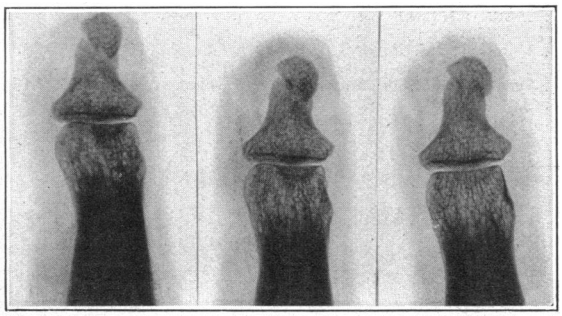
Jan 21/31 Jan. 24 Jan. 24
Lateral view.

FIG. II



Feb. 13 Mar. 6 Mar. 28

FIG. III



April 28 May 28 Aug. 11

DISCUSSION

In the treatment of infections of the terminal phalanx, certain features of the anatomy, particularly the blood supply, should be borne constantly in mind. Even slight swelling and œdema of the very vascular area on the anterior aspect of the terminal phalanx, the so-called "closed space", may result in cutting off of the blood supply to the diaphysis by constriction beyond the distal transverse crease on the palmar surface of the finger. The escape of the epiphysis is accounted for by its having a separate artery of supply, which is given off sufficiently far proximally to avoid constriction. As has been elsewhere pointed out[1], this peculiar arrangement of its blood supply undoubtedly accounts for the early bone destruction which appears to occur much more quickly in the diaphysis of the terminal phalanx than elsewhere.

The function of the epiphysis in serving as a barrier to involvement of the interphalangeal joint, as well as its ability to preserve its regenerative powers, is very interesting. Careful x-ray examination should be made of every infection of this region before amputation is resorted to. The absence of destructive changes involving this joint should be regarded as a positive indication for conservative treatment.

The periosteum and its function in the regenerative process presents a field for study. It is the opinion of the writer that the periosteum covering the diaphysis receives at least a portion of its blood supply from the epiphyseal artery. This would account for its escape in a destructive process which frequently does so much damage to the soft tissues themselves as well as to the bone of the diaphysis. Whether or not the periosteum takes part in the regenerative process, or whether the actual growth is from osteogenetic cells immediately beneath it is, in this case as elsewhere, possibly a debatable subject. There is no doubt that in the present case the periosteum acted as a limiting membrane. There was, however, a failure in the development of bone at the site of the original injury, in which area there had been actual destruction of a portion of the periosteal covering.

In the experience of the writer the ultimate shape of the newly formed phalanx can be very markedly influenced by restoring and preserving the normal contour of the finger with adhesive strapping, and by the wearing of a curved "U" shaped splint over the end of the finger for at least three months following removal of the sequestrum. Protection of the tip of the finger from injury in this manner seems to permit the formation of an appreciably greater length of new bone. Apart from this very advantageous feature, the patient experiences a degree of comfort and sense of security which permits him to resume work several weeks earlier than he otherwise might.

REFERENCE

1. MCKIM, *Canad. M. Ass. J.*, 1930, **23**: 642.

THE DANGERS OF USING IMPURE MUCIN IN TREATMENT OF PEPTIC ULCERS.—Rivers, Vanzant and Essex have demonstrated in certain specimens of commercial mucin the presence of large amounts of a secretagogue which by biological tests seems to be histamine. The presence of this substance may be looked on as a contaminant which can be avoided if proper methods of preparation are used. Until a consistently standardized, pure product is supplied, it will be impossible to evaluate the therapeutic use of mucin.—*J. Am. M. Ass.*, 1932, **98**: 1156.