vapour is the answer seems small. The true answer may lie in a combination of absorption through the skin and accidental ingestion. If this is so, then, because of deterioration in the form of the production of water-soluble mercury compounds in the powder prepared according to the B.P. 1932 formula on keeping, this form of the powder should be much more dangerous than the new form (B.P. 1948), in which oxidation is inhibited by the addition of dextrose. Owing to the small quantity of these substances present, it has not been possible to identify the compounds completely, though traces of sulphate were found in the extracts. The presence of sulphate in the extract suggests that impurities such as mercuric sulphide in the mercury may also play a part in the reaction, possibly by inducing electrolytic couples in the metal.

The men concerned in this inquiry, and those in the cases reported by Agate and Buckell, had all been using "grey powder" to develop latent finger-prints long before 1948, when the addition of 1% dextrose was recommended to prevent oxidation of the finely divided mercury. It is interesting to speculate whether such cases would be likely to occur now or not. In view of the fact that soluble-mercury compounds are so much more dangerous than the pure metal, it seems to be a reasonable presumption that the risk would be slightly reduced.

Now that it is known that there is a risk in the procedure, the use of the powder must be discontinued until the method of absorption has been accurately determined, and means of preventing it have been devised. The alternative of elaborating some non-toxic, equally effective substitute emerges, but, up to date, "grey powder" still holds the field as the preparation of choice for the development of latent finger-prints.

Summary

The staff of a police photographic department has been investigated for signs of chronic mercury poisoning due to the use of "grey powder" in the development of latent finger-prints.

One case of peripheral neuritis, probably due to this cause, has been found in a staff of five men.

Experiments are described which tend to show that inhalation of the mercury dust is not the mode of absorption.

"Grey powder" made without the addition of dextrose tends to undergo oxidation, and water-soluble mercury compounds appear in the powder on storage.

We wish to acknowledge our indebtedness to Mr. W. A. Bloor, Senior Scientific Officer with the British Iron and Steel Research Association, who undertook the dust counts, and to Mr. George E. Scott, Chief Constable of the City of Sheffield, for permission to carry out the clinical side of this investigation among the men under his command.

REFERENCES

- Agate, J. N., and Buckell, M. (1949). *Lancet*, 2, 451.
 Buckell, M., et al. (1946). *Brit. J. Industr. Med.*, 3, 55.
 Dublin, L. I., and Vane, R. J. (1933). *Occupation Hazards and Diagnostic Signs Bulletin* 582, U.S. Dept. of Labor, Bureau of Labor Statistics.
 Roberts, I. (1936). *Quart. J. Pharm.*, 9, 684.

A note in *La Presse Médicale* of April 5 remarks on the numbers of Dutchmen who are leaving Holland as emigrants to various parts of the British Commonwealth or to the United States. In five years 56,478 persons left Holland: 11,872 went to Australia, 707 to New Zealand, Canada took 23,158 and South Africa 6,392, while the U.S. admitted 11,896. During the first six months of 1951, 9,000 more left for Canada and another 4,000 were waiting for transatlantic transport. The reason for this emigration lies in the smallness of Holland, which has to accommodate over 10 million people in a land which a hundred years ago only supported 3 million.

PILONIDAL SINUS OF THE AXILLA

BY

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Pilonidal sinus of the coccygeal region appears to have been first recorded by Anderson (1847), of Boston, who found hair in a sacro-coccygeal ulcer. A more typical case was reported, however, by Warren (1854). In 1880 Hodges gave a very complete description of the suppurative lesion of the nates and applied to it the name of pilonidal sinus. Hodges's paper is particularly interesting in that it made full reference to the occurrence of hair-containing sinuses in regions of the body outside the sacro-coccygeal area. He mentions, for example, that "hair cutters are continually in trouble from the short hairs which penetrate the skin of their fingers and hands," thus anticipating by more than 60 years the description of pilonidal sinus as it occurs in a barber's hand, furnished by Patey and Scarff (1946, 1948) and Ewing (1947). Hodges also mentions the frequent intrusion of hair from a mattress or mat into the sole of a bare foot. T. E. Smith (1948) has recorded the occurrence of pilonidal sinus anteriorly in the perineum. Suppuration related to buried hair may also occur at the umbilicus; at the meeting in Boston in 1854 of the Society for Medical Improvement, where Warren made his historic communication, a Dr. Jackson referred to a specimen of a "lock or pellet of hair taken from near the umbilicus"; and we have observed in this hospital a hirsute young female patient with recurrent umbilical suppuration in whom a pilonidal sinus in this situation was suspected but who was unwilling to submit to the proof of omphalectomy.

To these five sites of pilonidal suppuration—the sacro-coccygeal region, the perineum, the barber's hand, the sole of the foot, and the umbilicus—can now be added a sixth, the axilla.

Case Report

A man aged 34, dark-haired and abundantly but not abnormally hirsute, attended this hospital in October, 1949. He had a small sinus in the right axilla which had discharged intermittently for six months. There was a free discharge of pus from the sinus and some oedema around it. The appearance suggested tuberculosis, though the axillary lymph nodes were not enlarged; *Myc. tuberculosis* could not be demonstrated in the pus. The previous history obtained then from the patient included (1) a pleural effusion investigated elsewhere and considered not to be tuberculous, (2) an episode of supraspinatous tendinitis, and (3) a pilonidal sinus of the sacro-coccygeal region whose relevance was not appreciated at this stage.

In August, 1950, the patient was admitted to hospital for the treatment of continuing axillary suppuration, and an elliptical piece of skin was removed, with its long axis transversely across the axilla to include the openings of two sinuses. The incision was deepened into the subcutaneous tissue of the axilla and a block was removed to include the deeper portions of the sinuses, which extended to about 1 cm. under the skin. The skin wound was closed. Histological examination of the material removed showed very narrow openings lined by squamous epithelium leading to an irregular collapsed cavity with a partial wall of squamous epithelium and an abundance of granulation tissue. The histologist considered that excision had been incomplete on one side. The pus obtained at this operation showed a moderate number of pus cells, very few Gram-positive cocci,

and no acid-fast bacilli. Culture gave a scanty growth of *Staph. albus* resistant to penicillin. After this operation the wound broke down and further accessory sinuses developed, and suppuration was renewed in spite of intensive streptomycin therapy.

On June 7, 1951, a further unsuccessful attempt at excision of the inflamed area was undertaken; the histological pattern was the same as before, but this time with groups of giant cells suggesting a foreign-body reaction. On October 10 the clinical appearances of the axilla, with the scar of a previous operation, multiple discharging sinuses in its neighbourhood, and subcutaneous induration without lymph-node enlargement, seemed strikingly similar to the appearances usually presented by a pilonidal sinus in its usual sacro-coccygeal site. When expression was given to this similarity, the patient mentioned that during his military service he had in fact undergone two operations for pilonidal sinus, and reference to the notes afforded a record of this history, which had not been previously considered pertinent. A presumptive diagnosis was therefore made, on clinical grounds, of pilonidal sinus of the axilla.

On November 27 Mr. John Barron undertook a radical excision of the skin of the floor of the axilla with all connective tissue underlying it and with the whole area of axillary suppuration; the axillary vein was exposed. The resultant skin defect was repaired by an advancement flap. The wound healed by first intention and has remained healed since. The histological appearances confirmed the clinical diagnosis of pilonidal sinus of the axilla. Dr. C. V. Harrison reported as follows: "A piece of fatty tissue 100 by 70 by 10 mm. with attached skin was received. A small dimple was seen on the surface and a track was traced for 10 mm. A section was taken across the track; the latter lay between 1 and 2 mm. below the surface and was lined by granulation tissue. The cavity was of irregular shape and was packed with polymorphs and macrophages. Two hairs were found in the track, both surrounded by a foreign-body reaction. The appearances are those of a pilonidal sinus."

Comment

It seems clear that this patient suffered from a pilonidal sinus of the axilla, although it is not possible to say whether the axillary suppuration in his case was due originally to buried hair or whether the pilonidal effect has been consequent upon some down-growth of, or downward traction upon, hair-bearing axillary skin in the granulation tissue and scarring of an axillary suppuration due to some other cause. There are several points of interest that arise from consideration of the case history. The suspicion that a pilonidal sinus might be located in the axilla of this patient did not arise until after multiple operations had been undertaken, and the buried hair was not detected until a particular search for it was prompted by the presumptive clinical diagnosis. The possibility of a pilonidal effect in the axilla may perhaps usefully be borne in mind when patients present with intractable superficial inflammation in that situation.

The development of pilonidal suppuration in two different sites in the same patient suggests that anatomical abnormalities in the sacro-coccygeal region may not be the sole cause of the suppuration which occurs in that area. This patient, whether from a peculiarity of hair growth or of sweat-gland formation, or from some hormonal or metabolic disturbance which has not been revealed (and it is curious that most sufferers from sacro-coccygeal suppuration are male), has been liable to a down-growth of hair not only in the sacro-coccygeal region, where a congenital sinus may have encouraged it, but in the axilla, where there are no congenital sinuses larger than the apocrine glands. Hodges's original title of "pilonidal sinus"

would still seem to be more desirable, even in the sacro-coccygeal region, than any anatomical or other titles that have subsequently been conferred upon this pathological picture.

Wide excision and plastic repair would seem to be the only suitable treatment for axillary suppuration of this character.

I am grateful to Dr. C. V. Harrison for his pathological reports, and to Mr. J. N. Barron for the details of the operation which he performed and for the plastic care which he gave this patient. I am also indebted to Mr. M. R. Ewing for drawing my attention to the excellence and comprehensiveness of R. M. Hodges's original paper.

REFERENCES

- Anderson, A. W. (1847). *Boston med. surg. J.*, 36, 74.
Ewing, M. R. (1947). *Lancet*, 1, 427.
Hodges, R. M. (1880). *Boston med. surg. J.*, 103, 485.
Patey, D. H., and Scarff, R. W. (1946). *Lancet*, 2, 484.
——— (1948). *Ibid.*, 2, 13.
Smith, T. E. (1948). *J. Amer. med. Ass.*, 136, 973.
Warren, J. M. (1854). *Amer. J. med. Sci.*, 28, 113.

ACRYLIC REPLACEMENT AFTER SEGMENTAL RESECTION OF BONE

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The accepted treatment of bone tumours, even those of moderate malignancy, is, whenever possible, amputation of the affected part. This report of three patients is concerned with the preservation of limbs disabled from disease by resection of the tumour-bearing segment and the subsequent restitution of the defect by the use of an internal prosthesis made of acrylic resin and steel.

Case 1. Osteoclastoma

A woman aged 20 sustained a pathological fracture of the right femoral neck on November 7, 1949 (Fig. 1). Curettage, packing the cavity with iliac-bone chips, and immobilization in plaster spica for 10 weeks produced no

FIG. 1.—Case 1. Radiolucent lesion in femoral neck with pathological fracture. FIG. 2.—Case 1. Twenty-two months after insertion the prosthesis has worked loose in femur. FIG. 3.—Case 2. Lytic lesion in trochanteric region.