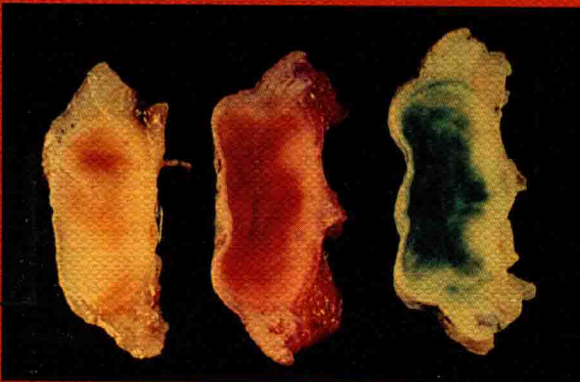
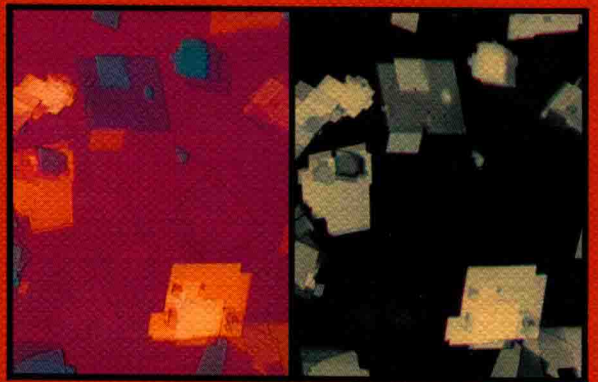


A Colour Atlas of

Surgical Pathology

W.Guthrie

R.Fawkes



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W. Guthrie
MBChB, FRCPath

Senior Lecturer in Histopathology
Honorary Consultant Pathologist
Ninewells Hospital and Medical School
University of Dundee (英) 郭提

R. Fawkes
FIMLS

Senior Chief Medical Laboratory
Scientific Officer
Department of Pathology
Ninewells Hospital and Medical School
University of Dundee

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Preface

This Atlas of surgical pathology contains colour photographs of pathological specimens from patients suffering from conditions presently dealt with by surgeons. Photomicrographs from selected cases are included to give an overall histopathological coverage, sufficient to satisfy the needs of undergraduate and postgraduate students preparing for examinations in pathology, as well as providing the practising histopathologist and surgeon with a ready reference to illustrations of a wide range of common diseases, as well as some of the more uncommon but well-known disorders.

The Atlas is divided into ten chapters each comprising a group of topographical topics (T) corresponding in general to the SNOP classification, devised by the College of American Pathologists.

In each chapter alterations in the various organs are dealt with under eight major SNOP morphological (M) headings – traumatic, congenital, mechanical, inflammatory, degenerative, fine cytological, growth disorder and neoplastic. Where an aetiological agent only is illustrated, the SNOP aetiological (E) number is given.

We have tried to tailor cover according to the importance or frequency of any topic or alteration, and where diagnostic difficulties are well recognised extra space has been allotted. Age, sex, occupation, race and nationality are included in many of the case histories, because they often provide important clues to the correct diagnosis. Included are several examples of tropical diseases from patients who have undergone surgical biopsies. Special techniques such as electronmicroscopy, immunofluorescent microscopy, histochemistry and immunoperoxidase staining are included mainly where they are considered essential for diagnosis. The magnifications quoted for each photomicrograph is that of the original 35 mm transparency. Electronmicrograph magnifications are as stated.

This Atlas is primarily intended to illustrate gross surgical specimens. Therefore, we have restricted the histological coverage of needle and endoscopic biopsies to those relating to actual resected specimens. A few necropsy specimens are included where they appear to be particularly relevant.

The appendix has been compiled as a guide for trainee surgeons and pathologists in the sincere hope that mistakes can be avoided and good relations maintained between theatre and laboratory staff.

Acknowledgements

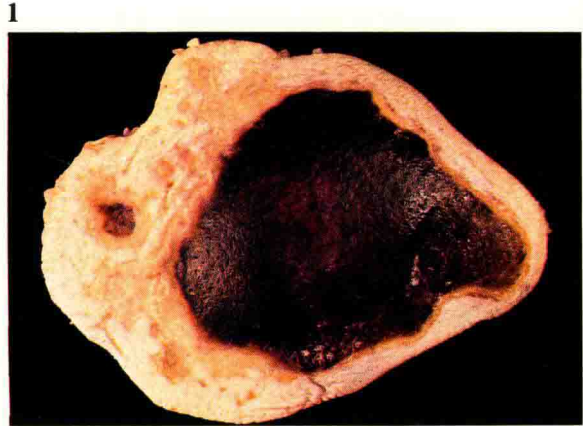
We thank the following who have helped us to complete this Atlas: Professor J. Swanson Beck for access to the material in the department of Pathology in Ninewells Hospital, Dundee, and for his continued encouragement and interest.

Emeritus Professor A. C. Lendrum, Professor W. W. Park, Dr. George H. Smith, Mr J. W. Corkhill, Mr D. S. Fraser, Mr W. Slidders and the late Mr S. M. Morrison through whose continued efforts valuable material and methods were available to us from Dundee Royal Infirmary, Maryfield Hospital and Queens College, Dundee. Our surgical colleagues and operating-theatre staff whose co-operation has enabled us to prepare the specimens for macroscopic and microscopic presentation. Our medical colleagues in the Department of Pathology, Ninewells Hospital, Dundee for their co-operation and for providing material from cases dealt with by them. The scientific staff of the Department of Pathology, Ninewells Hospital, Dundee for help in the preparation of some of the specimens and sections but particularly Mrs Sheila Gibbs, Mrs Wilma Stewart, Mr George Coghill, Mr Gordon Milne, Mr Stewart McPherson, Mr Andrew Grant, Mr Alan Webster, and Mr W. Milne. The secretarial and clerical staff of the Department of Pathology, Ninewells Hospital, Dundee, especially Miss Jennifer Towns and Miss Joan Hay. The help of Mrs Eileen Mackenzie who typed the manuscript is gratefully acknowledged.

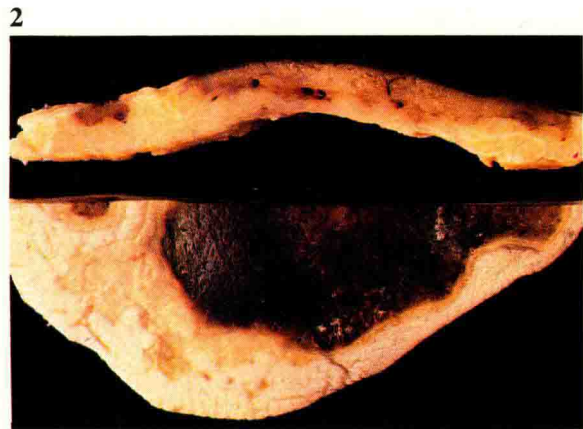
1 Integumentary haematological lymphatological systems

Skin and subcutaneous tissues (T01 – T03)

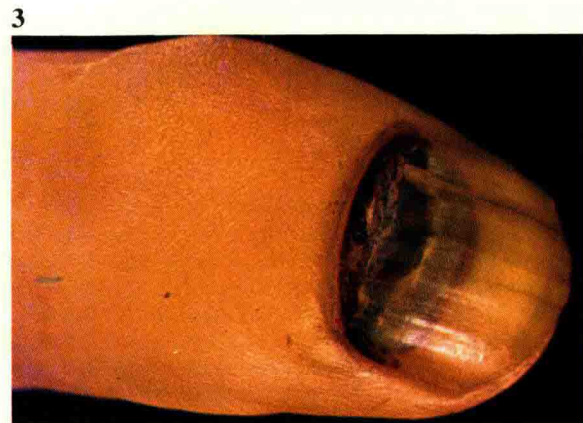
1 Caustic soda burn (1100) (6×6cm) of forearm from a 44-year-old woman. The specimen was resected to allow grafting.



2 Caustic soda burn (1100) Same case as 1 sliced to show full thickness destruction of dermis and of a 1.5cm depth of subcutis.



3 Brown discolouration of fingernail (1200) from a 17-year-old youth: it was regarded clinically as malignant melanoma; the finger was amputated. The overall yellow colour is the result of iodine-containing antiseptic used for skin preparation. Histological sections failed to show any neoplasm. The discolouration proved to be partly caused by an alteration in the nail keratin and partly by organising haematoma thought to be related to traumatic disorganisation of the distal interphalangeal joint sustained some months earlier.

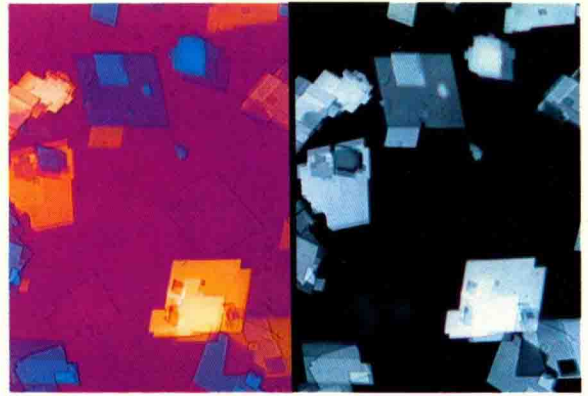


4



4 Branchial cleft cyst (2534) from the left side of neck, deep to sternomastoid muscle close to the internal jugular vein of a 40-year-old man. The (4×2.2cm) almost translucent cystic mass was received intact and a sample of glistening contents was examined for crystals (see 5). There was chronic inflammation of the wall in which lymphoid tissue was closely applied to thinned stratified squamous epithelial lining.

5



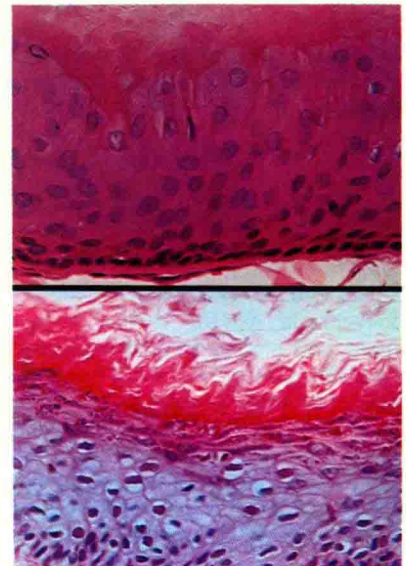
5 Cholesterol crystals from branchial cleft cyst (2534) (shown in 4) viewed with polarising microscope with (on the left) first order red compensator. The crystals are in plate form often showing the characteristic notch out of one corner. (×83)

6



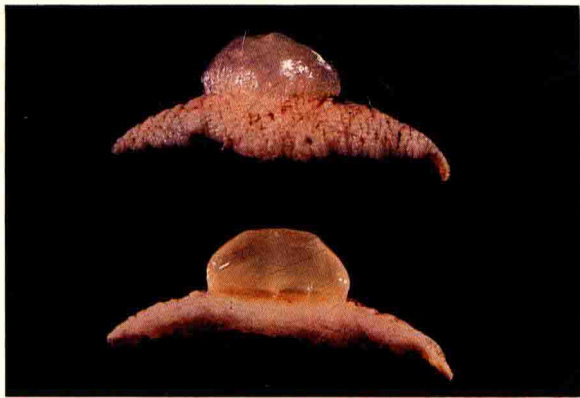
6 Sebaceous cyst from scalp (pilar cyst) (3543) The cyst is 2cm in diameter: the contents are homogeneous and commonly calcify; 90 per cent occur on scalp.

7



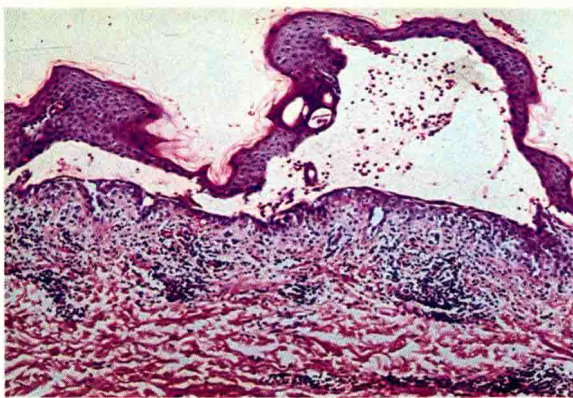
7 Sebaceous cyst and epidermal cyst (3541 + 3543) Sections to show differences in lining. Sebaceous cyst (top) shows epithelial cells without cell bridges, peripheral palisades and innermost cells do not show keratin granules: the keratin formed is hair keratin. Epidermal cyst (bottom) is lined by keratinising stratified squamous epithelium resembling epidermis and its contents of keratin flakes seldom if ever calcify. (H&E×133)

8



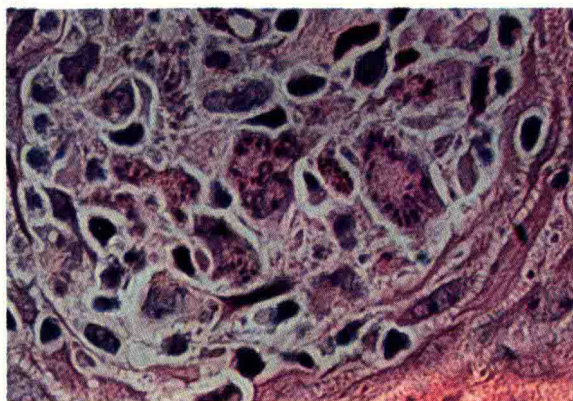
8 Bullous pemphigoid (4080) One of many vesicles developing over nine days on the arms and legs of a 63-year-old labourer. It is subepidermal vesicle 1mm in diameter. Diagnosis was confirmed by demonstrating immunoglobulins on the basement membrane, using immunofluorescent technique.

9



9 Pemphigus vulgaris (4942) Section shows intra-epidermal vesicle with acantholysis. Diagnosis was confirmed by demonstrating immunoglobulins on epidermal cell surface, using immunofluorescent technique. (*H&E* $\times 33$)

10



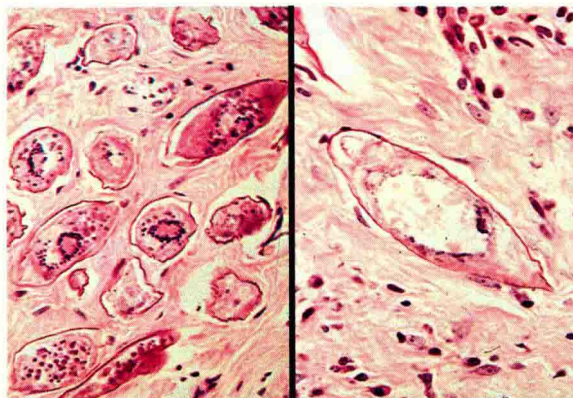
10 Leishmaniasis (tropical sore) (4400) Section shows numerous phagocytes containing the parasites. Imprints or smears made from the ulcer edge give clearer definition of the organism in which a kinetoplast can be made out. (*H&E* $\times 330$)

11

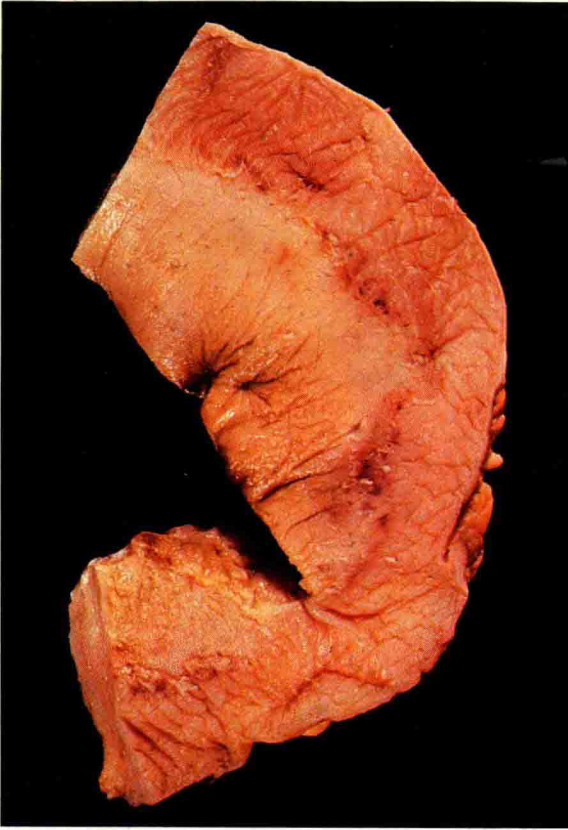


11 Schistosomiasis (4400) The section of a snippet of skin taken to establish the diagnosis in a patient from Zimbabwe, shows eggs with terminal spine (*S. haematobium*) lying beneath the epidermis and in chronically inflamed fibrosed dermis. (*H&E* $\times 53$)

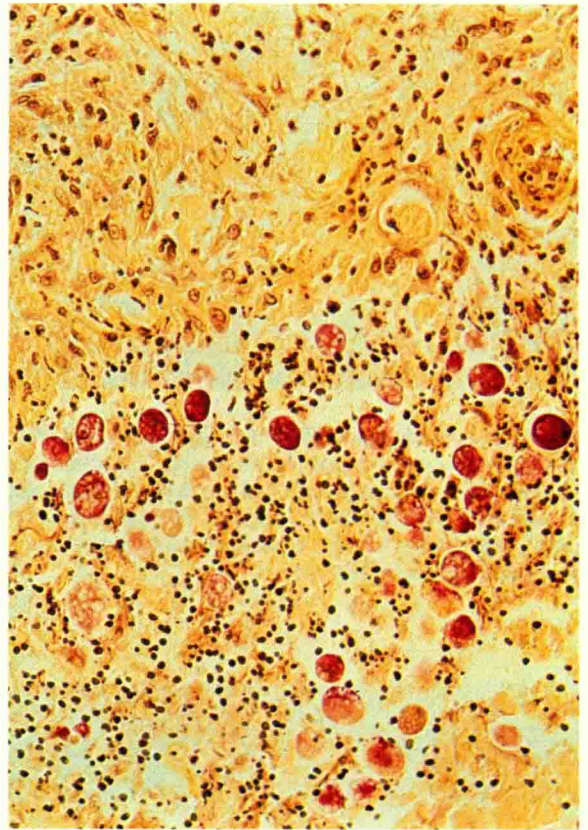
12



12 Schistosomiasis (4400) Sections showing eggs in cross and longitudinal section: there are plasma cells in the fibrous tissue in these fields; elsewhere there were granulomatous foci, some containing eosinophil polymorphonuclear leucocytes. (*H&E* $\times 83 \times 133$)

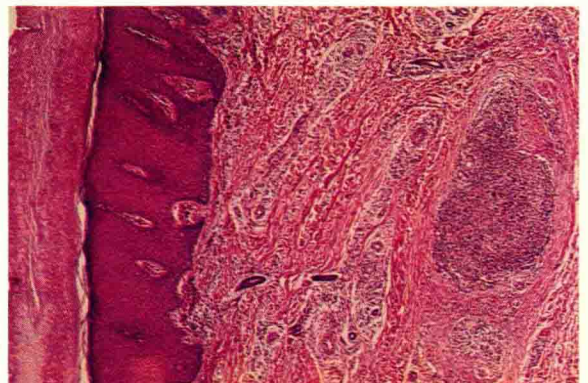


13 Amoebiasis cutis (4410) Part of a wreath of skin excised from the anterior abdominal wall of a merchant seaman whose appendicectomy wound broke down and was followed by progressive destruction of much of the skin of the anterior abdominal wall. The edge of the ulcer was undermined. Ordinary cultures produced a mixed flora and were diagnosed as Meleney's synergistic gangrene. The patient died before the correct diagnosis was established.

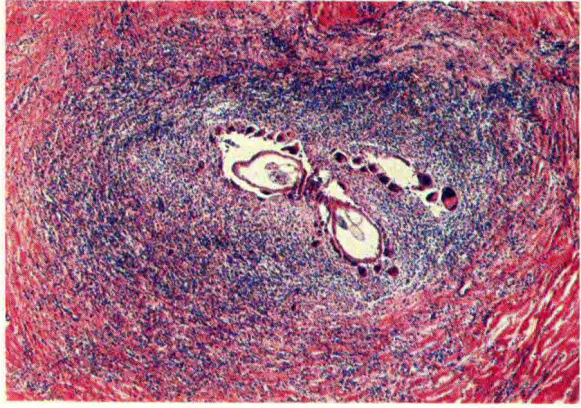


14 Amoebiasis cutis (4410) Section shows PAS positive *Entamoeba histolytica* among exudate under the overhanging subcutaneous tissue which shows non-specific inflammation. (PAS. H. tartrazine $\times 83$)

15 Sea urchin granuloma (4410) A nodular painful lesion dating from an injury several months earlier when the young woman trod on a sea urchin on the Mediterranean coast. Section shows deep-seated lesion with suppurative and granulomatous areas containing giant cells of Langhans' type. No microorganisms were identified. Complete excision was curative. (H&E $\times 13$)

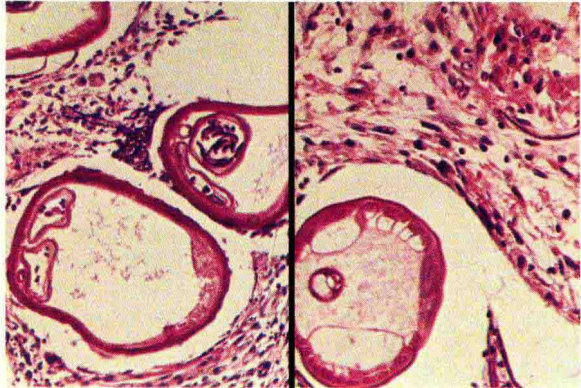


16



16 Onchocerca (4410) Section of skin from the abdominal wall of a missionary home on leave from West Africa. The adult worm is seen surrounded by multinucleate macrophages in the centre of a granuloma. (*H&E* $\times 13$)

17



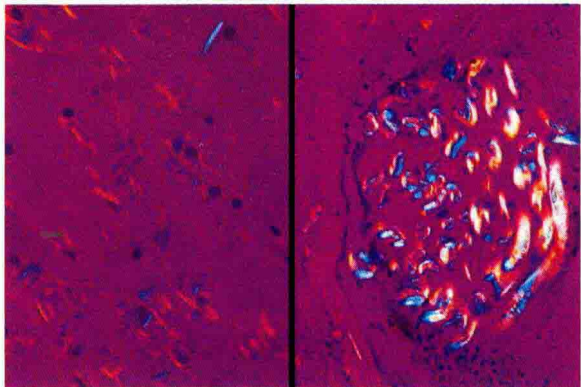
17 Onchocerca (4410) Section of a skin nodule from a young boy recently returned from West Africa. On the left the adult worm containing microfilaria is seen lying in a track with inflammatory exudate and multinucleate macrophages. On the right, parts of two microfilaria are seen in the granulation tissue in which eosinophil polymorphonuclear leucocytes were not conspicuous. (*H&E* $\times 53$; *H&E* $\times 83$)

18



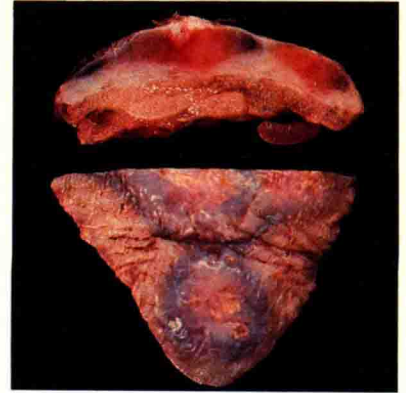
18 Foreign body (gauze swab) in a nephrectomy scar (4410) The lump measured $7 \times 5 \times 4$ cm and the cut surface shows thick pultaceous yellow-brown material and stranded fabric surrounded by a fibrotic wall up to 9 mm thick.

19



19 Foreign body in a nephrectomy scar (4410) Sections of the stranded fabric viewed with polarising microscope and first order red compensator. The area on the right shows intact double-stranded cotton fibres, while on the left they have been broken into small pieces and ingested by macrophages. (*H&E* $\times 133$ polarised and first order red compensator)

20



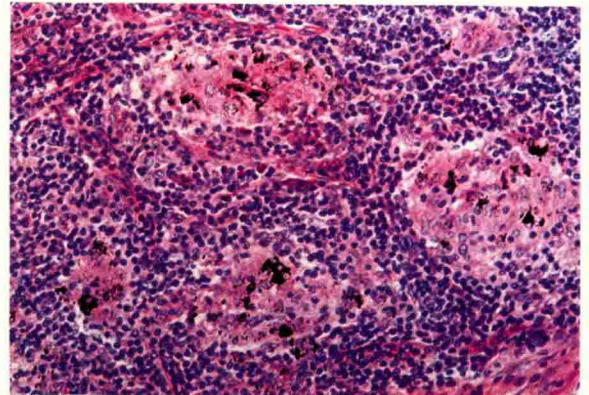
20 Tattoo granuloma (4410) on the forearm of a 50-year-old woman. The granulomatous reaction is related to the red pigment (mercury containing).

21



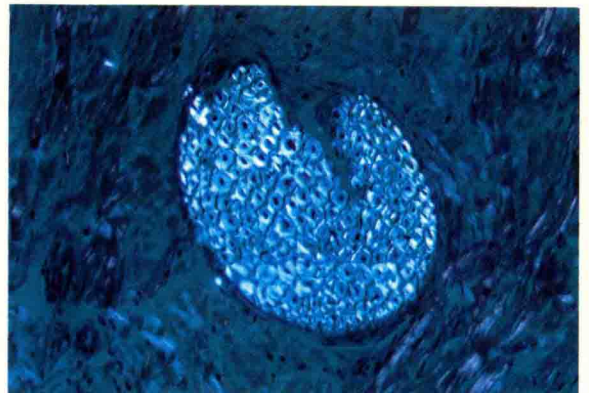
21 Tattoo granuloma (4410) Section shows very dense chronic inflammatory cell infiltrate with lymphoid cells, in follicles showing germinal centres, sarcoid granulomatous lesions and foreign-body giant-cell reaction. The overlying squamous epithelium shows marked acanthotic hyperplasia. (*H&E* $\times 3.5$)

22



22 Tattoo granuloma (4410) Section shows massive lymphocytic infiltrate and aggregates of macrophages with ingested pigment. Plasma cells and eosinophil polymorphonuclear leucocytes are also present in the infiltrate. (*H&E* $\times 83$)

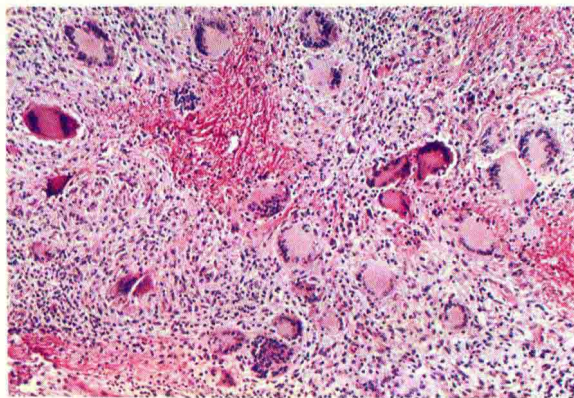
23



23 Foreign body in skin (4410) Section viewed with partially polarised light shows splinter of wood in transverse section with phagocytes applied to its periphery. (*H&E* $\times 83$)

24 Perianal fistula (4470) Section of the wall showing tuberculoid granulomatous lesions with numerous Langhans' type giant cells. Alcohol acid-fast bacilli (AAFB) were present in the Ziehl-Neelsen stained section and grown successfully on a Lowenstein-Jensen egg plate from exudate taken from the lesion. The patient was a young Asian immigrant. (*H&E* $\times 33$)

24

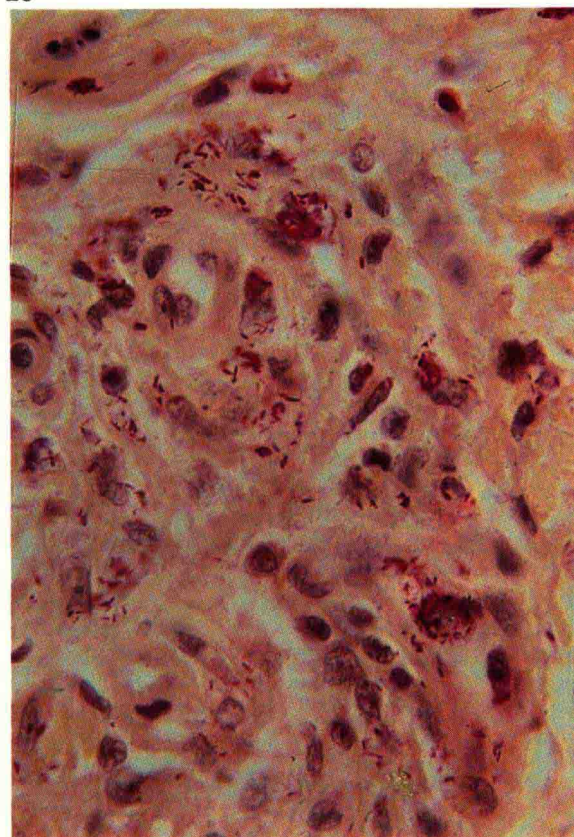


25 Tuberculosis cutis (4470) Photograph showing skin removed from dorsal surface of toes showing warty surface. For 10 years the patient had accepted increasing lymphoedema of lower leg and foot: when nodules appeared on the skin of the thigh a biopsy was taken and showed tuberculoid granulomata in which a single AAFB was identified. Eventually *Mycobacterium tuberculosis* was isolated on culture. The histological appearance of the illustrated lesion removed by a plastic surgeon was essentially non-specific chronic inflammation with gross oedema and fibrosis, with papillomatosis acanthosis and hyperkeratosis.

25

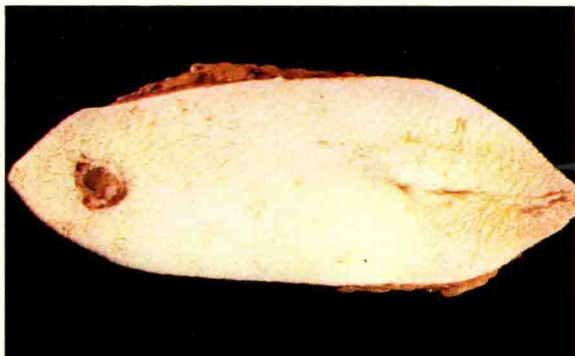


26



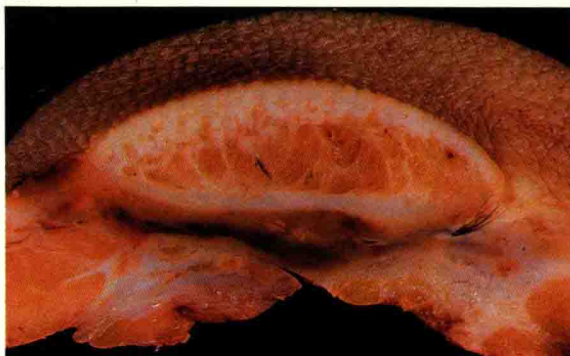
26 Leprosy (4470) Section of a skin nodule from a 26-year-old immigrant who had lived in Dundee for four years. The clinical diagnosis was nodular leprosy. Photomicrograph of the biopsy shows large numbers of acid-fast bacilli (*Mycobacterium lepra*) lying free and within macrophages (lepra cells). (*Modified Ziehl-Neelsen* $\times 450$)

27



27 Pilonidal sinus (4634) Specimen shows, near one end, granulation tissue forming a swelling around one opening, while at the other end hairs protrude from a slit-like opening with scarred skin around it.

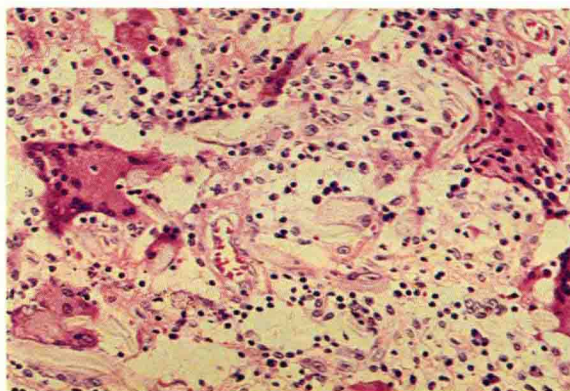
28



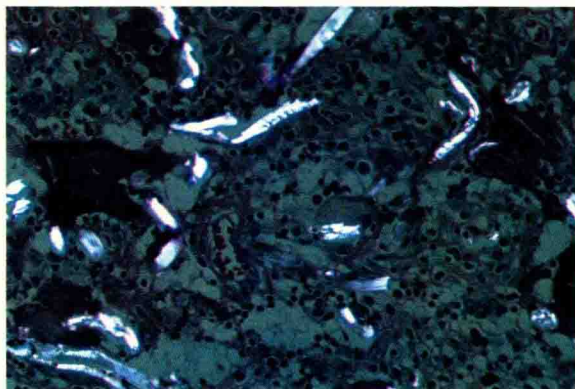
28 Pilonidal sinus (4634) A longitudinal section through the two orifices reveals a chronically inflamed sinus track going deeply almost to the plane of excision. Hairs are seen projecting from the orifice on the right.

29 Pilonidal sinus (4634) Section of the granulation tissue at one end shows multinucleate macrophages surrounding cotton wool fibres. (*H&E* $\times 83$)

29

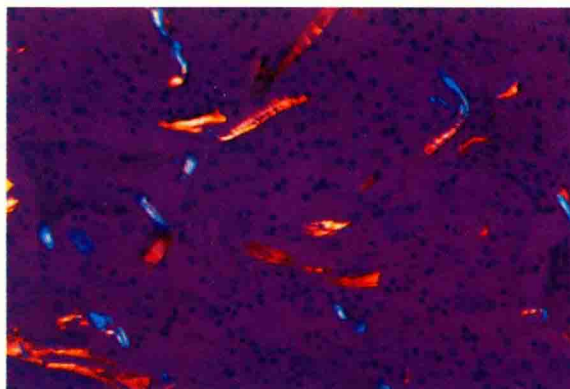


30



30 Pilonidal sinus (4634) Same section as **29** viewed with polarising microscope with partially polarised light. The cotton fibres appear as twisted, strongly birefringent double strands. (*H&E* $\times 83$: *partially polarised*)

31



31 Pilonidal sinus (4634) Same section as **29** viewed with polarising microscope with full polarised light and first order red compensator. The fibres appear yellow or blue according to how they lie in relation to the compensator plate. (*H&E* $\times 83$: *polarised with first order red compensator*)