

## Gram stain modified to improve colour contrast

One of the disadvantages of Gram stain is that the final Gram counterstain colours not only the Gram-negative material but also all the other background material in the preparation. A modified technique has been developed to improve colour separation and to eliminate much of the unwanted background Gram-negative stain.

The basis of the modification to be described is Preston and Morrell's (1962) Gram staining method. The procedure is as follows:

Take the section to water. Take 4 g crystal violet, 40 ml methylated spirit (64 OP), and 160 ml of 1% ammonium oxalate in water, for 30 to 60 seconds for the ammonium oxalate-crystal violet solution. Rinse briefly in water. Apply Lugol's iodine to the section for 30 to 60 seconds. Pour off the iodine solution and wash the section for 30 seconds in iodine-acetone (7 ml liquor iodi fortis and 193 ml acetone) to decolorize. Then counterstain with dilute carbol fuchsin for three minutes. Pour off the excess carbol fuchsin and wash the section in picric acid-cellosolve reagent, from a dropper bottle, for 15 seconds to two minutes to differentiate and counterstain. The picric acid-cellosolve solution, which should be made up freshly at least once a week, is 3 ml 0.6% picric acid to 7 ml cellosolve (2-ethoxy ethanol). After counterstaining blot dry, but do not wash, clear in cedarwood oil (for 10 min), take to xylene in ascending grades of cedarwood oil-xylene, and mount in DPX.

Although this modification of Gram's method was developed specifically to stain infected tooth tissue it is not limited to this one application. The technique described is in one step and is a rapid extension to the standard Gram stain used in many laboratories. Its use can make the microscopic diagnosis of the presence of Gram-negative forms in smears and tissue sections much easier. In such sections the cell nuclei are stained pink and the cytoplasm a pale orange yellow against a colourless or pale yellow background so that Gram-negative bacteria are easily demonstrated.

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### References

- Cruikshank, R. (1965). *Medical Microbiology*, 11th ed., p. 646. Livingstone, Edinburgh.  
Drury, R. A. B., and Wallington, E. A. (1967). *Carleton's Histological Technique*, 4th ed., p. 328. Oxford University Press, New York and London.

## Book reviews

RENAL FAILURE IN PARAPLEGIA By C. R. Tribe and J. R. Silver. (Pp. ix + 107; illustrated. 70s.) London: Pitman Medical Publishing Co. Ltd. 1969.

Dr C. R. Tribe, consultant pathologist at Wycombe General Hospital, was formerly senior registrar in morbid anatomy at Stoke Mandeville Hospital and his account of renal failure in paraplegia is based on a series of 220 necropsies carried out on patients from the National Spinal Injuries Centre at that hospital. His co-author, Dr John Silver, now Director of the Liverpool Regional Paraplegic Centre, was formerly research physiologist at the National Spinal Injuries Centre. With such a background, it is not surprising that Dr Tribe and Dr Silver have produced a most authoritative work.

While much of the treatment of patients in the acute stage of paraplegia is carried out in specialist centres, the increasingly good prognosis resulting from this specialized care results in many patients eventually returning to the care of their local hospitals. In contrast to the early stages, where pressure sores are the main source of mortality, in the later stages it is renal failure and its effects on the cardiovascular system that bring about the death of the patient. This book therefore provides a most useful guide for all who have to do with paraplegia in its late stages. It should not be thought, however, that its value is to a restricted group of readers only, for it contains a great deal to interest the urologist, the neurologist and, the physician with an interest in renal disease and hypertension while every morbid anatomist will find it invaluable in the interpretation of the complex changes resulting from chronic renal tract disease.

*Gram stain modified to improve colour contrast—concluded.*

- Ollett, W. S. (1947). A method for straining both Gram-positive and Gram-negative bacteria in sections. *J. Path. Bact.*, 59, 357-358.  
Ollett, W. S. (1951). Further observations on the Gram-Twort stain. *J. Path. Bact.*, 63, 166.  
Pearse, A. G. E. (1970). *Histochemistry: Theoretical and Applied*, 3rd ed., vol. 2, p. 280. Churchill, London.  
Preston, N. W., and Morrell, A. (1962). Reproducible results with the Gram stain. *J. Path. Bact.*, 84, 241-243.

The causes of death in paraplegia are reviewed as are the causes of renal failure. Dr Silver contributes a chapter on diagnostic tests for urinary tract disease in paraplegia. The bulk of the book is devoted to the pathology of the renal tract, amyloidosis, and hypertension. The section on amyloidosis is of particular value, being based on 65 necropsy cases and a large series of rectal biopsies.

The text is excellently illustrated by more than 50 photographs and photomicrographs, all of high quality, and a large number of tables and diagrams. The style is clear and concise and the book is recommended to all who deal with paraplegia or longstanding renal tract disease.

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PATHOLOGY OF THE HEART AND BLOOD VESSELS 3rd ed. Edited by S. E. Gould. (Pp. xx + 1198; illustrated. \$42.50.) Springfield, Illinois: Charles C. Thomas. 1968.

The appearance of a new edition of 'Gould' constitutes an important event for all interested in diseases of the heart and blood vessels—and which of us is not? The editor has assembled for this third edition an augmented team of experts in every aspect of the subject. Each author surveys in detail his allotted subject, and with a wealth of photographs and diagrammatic illustration, which is particularly valuable in the chapters on developmental abnormalities. Features added since earlier editions include sections on the conduction system (M. Lev), fine structure in relation to function (D. Spiro, H. Spotnitz, and E. H. Sonnenblick), experimental pathology (Hans Selye and G. Gabbiani), angiocardiology (M. Viamonte and F. A. Hernandez), and histochemistry (J. F. McManus). It is surprising amongst all this detail to find no section devoted to the topic of atherosclerosis: the subject is dealt with in seven brief pages in the section on 'Diseases of noncoronary arteries' by Ira Gore. This is about the coverage that would be expected in a student's textbook and seems curiously inadequate in this context. The subject is further discussed in the chapter on coronary artery disease, but nowhere is an overall survey attempted.

All but one of the 34 contributors to this volume work in the United States, the odd man out being Hans Selye from Montreal. In these circumstances it is not surprising to find some neglect of non-American sources in the references quoted, but even so it comes as a shock to find no mention of the work of Zemplyni