

class in home nursing more useful than some mathematics and our boys do well to take a course in first aid?"

The highlight of the convention for me was the address given by Sir Wilson Jameson, chief medical officer of the British Ministry of Health, who spoke of meeting the public health emergency in Great Britain. May I quote his final words of advice on the subject of defence: "Firstly, be prepared. Had England been prepared she might not have been where she is to-day. Secondly, a careful distribution of technical man power should be made. A good central body is needed to distribute health services where and when needed. Lastly, everyone must be alert and be willing to do what he can over and above his normal duties."

GRAM'S STAIN.

GRAM POSITIVE AND NEGATIVE ORGANISMS.

By John Hatcher.

Gram first introduced his now famous staining method in 1884, and for many years it has been used the world over; the reason for its universal application is that it has become one of the elementary ways of classifying bacteria. All bacteria are divided into two large groups, known as Gram-positive or Gram-negative organisms, which simply means that they do, or do not, stain by Gram's method of staining, hence the designation that an organism is Gram positive or negative. A common example of a Gram-positive organism would, of course, be the Staphylococcus and a Gram-negative the B. coli. Actually Gram's method of staining consists of four operations, the primary stain, usually methyl violet, the fixing solution, iodine, decoloration, usually alcohol, and a counterstain, neutral red. Gram-negative organisms stain with the counterstain. Now what happens is that all organisms are stained by the primary stain, but only those which are Gram-positive are fixed by the iodine solution and so their colour resists the action of the decolorising solution. Under the microscope we therefore see all the Gram-positive organisms staining blue or violet according to the particular type of primary stain used and the Gram-negative ones appear red.

Though there are innumerable types of bacteria, somewhat fortunately medical bacteriology is only concerned with a comparatively small number.

COMMON PATHOGENS.

Gram-positive Bacilli:

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| B. Diphtheria. | |
| B. tuberculosis. | B. leprosy. |
| B. anthrax. | B. acne. |
| B. tetanus. | Organism of actinomycosis. |
| B. welchii and other gas gangrene organisms. | |
| B. botulinus. | |

Gram-negative Bacilli:

- B. typhoid and paratyphoid.
- B. coli.
- B. pyocyaneus (B. of green pus.).
- B. influenza.
- B. of glanders (B. mallei).
- B. proteus.
- B. of dysentery (i.e., Shiga, Flexner, Sonne, etc.).
- B. pestis (B. of bubonic plague).
- B. chancroid (B. of Ducrey).
- B. friedländer (B. mucosus capsulatus).
- Spirillum of Asiatic cholera.
- B. pertussis (B. of whooping cough).

Gram-positive Cocci:

- Staphylococcus.
- Streptococcus.
- Pneumococcus.
- Micrococcus tetragenus.

Gram-negative Cocci:

- Gonococcus.
- Meningococcus.
- Micrococcus catarrhalis.

Method of Staining:

Gram's method of staining has been modified many times and there are many formulæ in use; the following method is, however, very simple and in every way suitable for use in the Ward Test Room. A thin smear of the material to be examined is made on a microscope slide, allowed to dry in the air, and fixed by rapidly passing three times through a Bunsen burner flame. Considerable care must be taken to avoid overheating; if the slide is held in the fingers this danger is minimised.

Procedure:—

- (1) Stain in methyl violet (1 per cent. watery solution) 2 minutes.
 - (2) Rinse rapidly in water 2 minutes.
 - (3) Fix in Lugol's iodine.
 - (4) Decolorise in methylated spirit until no further colour comes away.
 - (5) Wash in water ½ minute.
 - (6) Counterstain in 5 per cent. neutral red 2 minutes.
- Dry and examine under 1/12th objective.

It is important to keep to the times, and until some experience has been obtained it is a good plan to stain at the same time a control film of a known organism. Variation in the staining times may render Gram-positive organisms Gram-negative; another point is that different strains of organisms tend to vary in their staining reaction to Gram.

A ROYAL MEDAL FOR CANCER RESEARCH.

It is announced, says "Hospital Bulletin," that the Royal Medal of the Royal Society has been awarded to Professor E. L. Kennaway, for cancer research.

Professor Kennaway is Director of the Chester Beatty Research Institute attached to the Royal Cancer Hospital, Brompton Road, S.W. He has devoted many years to research work of this malignant disease, and his wife has worked with him.

The cause of cancer still eludes research workers, but Professor Kennaway has opened up new channels by his discovery of synthetic cancer producing substances. They include chemical compounds made up of soot and tar, which, while producing cancer, also have curative effects. It is as yet too early for much data, but interesting developments are forecast as soon as fuller reports are available. It may mean that there will be a new form of treatment in addition to that of surgery, radium and X-rays.

That these new compounds should produce cancer as well as cure it is not surprising, for X-rays react similarly. Many of the early pioneers in voluntary hospitals and research institutes sacrificed their lives in the interests of humanity until the technique of treatment reached the present high state of efficiency.

During the past year nurses have lost several devoted leaders from cancer, women whose lovable character leaves vacant a place in the heart which can never be filled. The more help we can render science in cancer research the better.

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