

SCIENCE AND ITS MARTYRS.

PIONEERS' NEED OF PROTECTION.

AN EXPERT INQUIRY.

TO THE EDITOR OF THE TIMES.

Sir,—The lamented death of Dr. Ironside Bruce in the full height of a brilliant and extremely useful career is a calamity of the worst degree. Medicine can ill afford to lose its pioneer workers in any branch, but least of all in that of radiology.

The discovery of the X-rays and the subsequent development of the applications to diagnosis and treatment forms one of the epoch-marking events in the whole history of medicine, full and interesting as that history is of important discoveries. The development of technique in radiography and radiotherapy is unfortunately associated with regrettable examples such as that furnished by the death of Dr. Ironside Bruce; nor is the experience confined to this country. Pioneer workers in all countries have paid the extreme penalty of their devotion to the advancement of the subjects they specialized in, and it is a matter for admiration that in no instance has a knowledge of the danger they exposed themselves to deterred these men from carrying on to the end the work they entered into with such energy and enthusiasm. All credit, therefore, must be given to those heroic members of the community for their courageous behaviour and their fortitude in facing the inevitable consequences of over-exposure to the mysterious rays.

It is also a matter for congratulation that, without exception, those heroic members of the medical profession laid down their lives in an effort to alleviate the sufferings of their fellow-men. It is with conviction, based on a personal knowledge of practically all who have suffered in this country, that the writer makes the statement that not one of them would have desired to limit the uses of the agents or to curtail in any way the work which is now in progress from any consideration of personal danger.

In view of the now well-recognized dangers of exposure to radiations, and particularly with the foreknowledge of coming developments in therapeutic practice, it is incumbent upon those who are responsible for the welfare of workers in radiological research and development that very stringent precautions should be taken to prevent the repetition of such disasters as have marked the developments of the past. Early in the war the Röntgen Society realized the dangers of over-exposure and appointed an expert committee to investigate and report on the measures of protection then existing. A valuable report was published, along with recommendations for the use of X-ray workers.

Many of the men who are now suffering from the effects of over-exposure undoubtedly were damaged during the years of war, when, unhesitatingly, with a full knowledge of the risk they ran, they worked continuously in their departments. Such was regarded as a duty, and cheerfully faced with a disregard for consequences. The country owes a great debt of gratitude to these men, but in those critical times no section of the community excelled another in its desire to do its duty.

The attention of radiologists was called recently, in a paper published by Dr. Mottram, to the changes induced in the blood of those workers who were engaged in the administration of radium to patients at a large institute in London. X-rays, though less active, exercise a similar action, even though no superficial evidence of an effect is produced on the skin. Comparatively recent developments in radiotherapy have led to the use of X-ray tubes of very high penetration, necessitating the employment of voltages of high tension currents approximating to 250,000 volts. The use of such radiation for long periods of time will mean that the dangers to those managing the tubes will be greatly increased.

It is imperative that nothing should be done to retard the development of the technique of radiotherapy, for on its developments may depend the greatly increased hope of a reliable means of dealing with cancer, a disease which, so far, has baffled the profession. It is equally imperative that, with a knowledge of those dangers, all measures of protection must be employed. The hospitals which have been equipped in recent years with the object of treating these diseases have, without exception, adopted measures of thorough protection so far as has been possible. It is certain that in the near future all hospital installations should be inspected by recognized experts, with a view to securing the protection of the patient and the operators.

There is no doubt on the question of being able to afford complete protection; but in order to do so it will be necessary to enter very thoroughly into a detailed scheme. With a view to the carrying out of such a scheme, it has been decided to appoint a special committee, consisting of members of the radiological societies, to investigate the matter in all its aspects. This committee will consist of expert physicists, physiologists, and radiologists. The objects of the investigation will be to report on:—

- (1) The changes induced in tissues by X-rays, and particularly on the blood changes.
- (2) The properties of the X-rays and the best means of controlling their action.
- (3) To report on the equipment of X-ray and electrical departments with a special view to the protective measures employed.
- (4) Recommendations for the guidance of the assistants in those departments, particularly dealing with the hours of work and the need for fresh air and change.

To come now to a very practical suggestion in regard to radiology in this country. The progress of the subject has been greatly impeded by the absence of any co-ordinated research work. A great deal of valuable individual research has enabled us barely to hold our own in the advances made since the discovery of X-rays. What is really required is the provision of research facilities on a large scale.

These would include the equipment of an institute, and the endowment of research on the physical, technical, and biological sides of the work. The value of work conducted in such an institute would be incalculable. In it all the problems indicated could be dealt with and appropriate measures suggested for the avoidance of the harmful effects we so greatly deplore.

An appeal was recently issued for the provision of funds to establish exactly such an institute as a standing memorial to Sir James Mackenzie Davidson, our most prominent pioneer. A large sum of money would be required to found this institute, but it is certain that if the idea could be realized much valuable work could be done and eventually a method evolved for the use of radiations whose dangerous properties could be avoided. Surely it is our duty to put in action at once the steps necessary to help towards the achievement of this end.

I am yours faithfully,
ROBERT KNOX.