Pioneers in the Art of Healing.

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4.—Pierre & Marie Curie.

THE NAME OF CURIE will always be linked with the association of radium, the name of that heroic couple whose labours gave the world this marvel of science that is so useful in medicine. Pierre Curie was born in 1859 and it was while he was a young research worker at the Sorbonne in Paris that he was given as an assistant a young Polish girl named Marie Sklodowska. She was already interested in science, having had her early education from her father, but as she became involved in the students' revolutionary organisation and deemed it advisable to leave Warsaw suddenly.

Penniless in Paris she obtained a job as a laboratory helper, little realising that her destiny lay in that meeting with Curie. Within a short time, in 1895, they were married and were working side by side on the question of radio activity. She obtained her science degree at the University.

There had previously been some work into the powers of certain elements, notably uranium—in the news now in connection with atomic bombs—to emit radiant rays, and the Curies were asked to study this question. They had no money for such research and consequently asked the Austrian Government for aid. They were sent a ton of pitchblende, vital raw material for the isolation of uranium, from the mines at Joachimstal.

The couple worked enthusiastically for months. "We lived in a preoccupation as complete as that of a dream." said Madame Curie later. It was in 1898 that the fateful discovery was made. Two years of endeavour were rewarded by the isolation, after removal of one impurity after another from the pitchblende, of a substance which shone in the dark, gave off heat and electrified the air around it. They called it radium.

But the mere discovery, important though it was, did not end their labours. They worked unceasingly to solve the many problems that confronted the development and use of this potent new element. It was soon noticed that the minutest quantity badly burnt the skin, and the realisation that here was something of inestimable value in the treatment of the disease. The use of radium was studied in relation to medicine, and progress has since been unceasing in relation to its value in cancers of various kinds, dermatoses, tumours and so on, although it seems fair to say that even now we are still on the threshold of far greater developments.

Pierre Curie, now holder of the Nobel Prize for Physics, amongst other awards, was given the Professorship of Physics at the University and was elected to the Academy of Sciences. Crossing a Paris Street one day in 1906 he was run over by a dray and killed instantly.

This blow did not stop Marie's work. She was given her husband's professorship and continued her work on radio-activity, doing much to establish the use of radium in various countries, including her native Poland, where in 1928 a radium hospital was founded in her honour aided by the people of America who sent her the price of a gramme of radium, over £10,000. This was the second gift she had from the U.S.A.; in 1921 the women of that country presented her with a gramme of radium. The standard unit for the use of radium is the curiegram, subdivided into milliecuriegramms and smaller.

Madame Curie died in 1934, her name and that of her husband immortalised the world over in the fight of science for humanity.

5.—Joseph Lister.

JOSEPH LISTER'S NAME and antiseptic surgery will always be linked wherever civilised methods of treating disease are practised. Born in 1827, his father was a famous optical and microscopical scientist, and Joseph turned early to medicine. He qualified as a surgeon at the age of 25 and went to Edinburgh where he was appointed assistant surgeon at the Royal Infirmary.

Here he began the studies that were to make him famous, studies aroused by his earlier experience at University College Hospital, London. Having seen much gangrene and pyaemia there he studied them and in 1857 published his classic paper on "The Early Stages of Inflammation." He had learned from the work of Pasteur in 1860 that the formation of pus was due to bacteria. The Coagulation of the blood was another allied subject to which he gave a great deal of attention.

Lister moved to Glasgow in 1860 and having convinced himself that there was some good chance of stopping putrefaction of blood and flesh in open wounds by means of a chemical agent, he experimented first on a compound fracture, dressing the wound with carbolic acid and painting the thick crust of blood so formed daily until all danger was passed. This use of undiluted antispetic was of course too caustic for general work in the surgery, and his famous lac plaster was later devised and adopted for general use. From about this time Lister's antiseptic methods began to revolutionise surgery which was then still in a crude way.

He was also much interested in the possibility of improving the arrestation of haemorrhages from wounds and carbolized the flaxen or silken dressings formerly used without any antiseptic at all. By 1869 he had advanced enough to succeed his father-in-law in the chair of clinical surgery back in Edinburgh. He spent a lot of time on this question of bacteriological control in dressings, experimenting with the fine absorbent kinds inside wounds which did not prove permanently satisfactory. He also introduced the carbolic air-spray for operating theatres, a notable advance, but one which was soon to prove unnecessary, for as he himself discovered, the serum of the blood was unsuitable for the development of aerial bacteria.

The year 1877 found Lister back again in London, this time at Kings College where he held the chair of surgery for the next fifteen years. All during this time his earlier work was achieving its due recognition, although more on the Continent than at home, and he was continuing to study the whole question of aseptic treatment.

Although some of his original methods have now become obsolete, Lister's great worth lies in his constant stressing of the need for killing the germs of septic matter in and around wounds. There is less emphasis now on the application of antiseptics than on sterilisation by heat, but in his care for rigorous aseptic methods in surgery generally evolved the now universal cleanliness achieved by sterilisation. He helped to save the one patient who died out of every five operated upon in the ghastly surgical wards of the 'sixties and earlier. As Sir Arthur Keith says: "He abolished for ever some of the most dreaded of human sufferings" and no man could have a better epitaph than that.

Besides his better-known work, Lister achieved much that was valuable in other directions. His ligature technique was only second in importance to his wiping out of hospital gangrene, pyaemia, erysipelas and septicaemia. He also devised new techniques for amputation through the condyles of the femur, and also for operations on the wrist, the breast and the bladder, as well as perfecting instruments for both these and other operations including sinus forceps and an aortic tourniquet.

Throughout the 'eighties and the 'nineties honours were showered upon him. He was made a Baron and was one of the first to be awarded the Order of Merit. But his finest tribute was in the Lister Institute of Preventive Medicine, modelled on the famous *Institut Pasteur* in Paris, and which was to continue with practical work long after his death in 1912.

(*To be concluded*)

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