will take up office towards the end of July; she is now away on a well-earned rest and holiday.

Irwin Hospital, Delhi. It is regretted that Miss Abram, the Nursing Superintendent of the Irwin Hospital left on June 1st. She has accomplished so much for the betterment of the Nursing Staff and also many improvements in the Hospital routine during the two years she was with us. She will be greatly missed in the Irwin Hospital. She has now left for a much needed holiday before taking up her new duties as General Secretary, The Trained Nurses Association of India, which we are pleased to say will be in Delhi.

—Miss Jenkins

Miss B.Van Vranken. During the months of May and June we have been most fortunate in having the services of Miss B. Van Vranken, a member of our Council from Allahabad, to work in the office at Headquarters. Miss Van Vranken was on leave and most nobly offered to come and help during this time. She has done yeoman service all quite voluntarily, and every member of the Association owes her a deep debt of gratitude for all her hard work done during the hottest months in Delhi in order to help the Association in the interim period between Miss Hartley leaving and the arrival of Miss Abram. We ask her to accept our very great thanks.

DISABILITY PENSION FOR NURSES RAISED

Rates of disability pension and pension to dependants of Nursing Officers of the Indian Military Nursing Service have been revised by the Government of India and the improved rates will have retrospective effect from September 15 1943, says a Press note.

The disability pension to Nursing Officers has been raised to Rs 100/- a month for total disability and a proportionate rate for less ability.

Dependants of Nursing Officers of the IMNS killed in action have also been made eligible for the award of 'dependants pension" as for commissioned officers of the IMD (British Cadre). Surviving husband, or parents, or brothers and, sisters of an officer of the IMNS killed in action may under certain conditions get a pension from Rs 45 to 70 per month according to the rank of the officer. Each eligible child may receive a pension of Rs. 24 per month if the father is alive and Rs. 40 per month if fatherless. The grant will, however, depend on the pecuniary needs of the dependants and the fact that they were largely dependent on the officer at the time of her death:

In order to meet the needs of serving members of the A. N. S., it has been decided that in stations where there are no Lady Divisional Superintendents, Lady District Superintendents or Lady District Officers serving members of the A. N. S. may obtain their requirements of khaki drill and khaki puggri cloth through their Matron/Officers Commanding.

Some Advances in Medicine which Revolutionised the care of the Sick

by Miss C.I.Abana

1. The founders of the **Germ Theory of disease** or Bacteriology were Louis Pasteur and Robert Koch.

Louis Pasteur, pioneer of modern theory of preventive inoculation against disease, born at Döle (Jura) 1822, was the son of a local tanner. Awakening to the call of study he acquired an interest in chemistry and graduated from Paris in 1847. He was Professor of Physics and Chemistry and then the Dean at the Faculty of Sciences at Lille 1847-1857, and Director of Institute of Paris 1884-1895.

In 1855 Pasteur found certain rod-shaped organisms in the blood of animals suffering from Anthrax. In 1864, he proved to the world, by his experiments on yeast cells in wines and beers, that spontaneous generation does not occur and that all microscopic life comes from a parent germ.

In 1878, he first proved that some bacteria cause disease in plants, again in 1879 he demonstrated that bacteria were the cause of puerperal fever. After many experiments in 1880, Pasteur developed a method by which animals could be made immune to anthrax; in the same year he successfully vaccinated fowl against chicken cholera.

Louis Pasteur is memorable for his work on molecular dysymmetry, fermentation, diseases of wine, silkworm, virulent diseases (anthrax and chicken cholera), and preventive vaccinations particularly of hydrophobia and anthrax.

Though of a peasant origin, the man himself was a gentleman, one who never inflicted wanton or needless pain upon others His humanity was that of a rare and noble kind, a nature of the deeps of absolute and inextinguishable being. Deeply religious, intensely serious, Pasteur's was a sensitive nature and he suffered unduly in his life from the captious cavillings of lesser men.

His last years were crowded with honours from all parts of the world, and after his death in 1895, an appropriate mausoleum for his remains, copied from the tomb of Galla Placidia at Ravenna, was built in the Pasteur Institute by his family.

Robert Koch. Robert Koch (pioneer in the development of the correct knowledge about specific infectious diseases), born in 1843 at Klausthal. Hanover, he was educated in the gymnasium of his native town and took his medical degree at Göttingen in 1866, where he was profoundly influenced by the teachings of Jacob Henle, whose theory of contagion in 1840 may have started Koch upon his life-work in science.

When he was district physician at Wollstein, he began with anthrax and worked out the complete life history and sporulation of the anthrax bacillus. About a week later, he gave a three day demonstration on his culture methods and results, which was the greatest bacteriological discovery yet made and was immediately published.

The memoir demonstrated that the anthrax bacillus is the cause of the disease and that a pure culture grown through several generations outside the body can produce it in various animals. Koch's results were violently opposed by Paul Bert but completely confirmed by Louis Pasteur.

In November 1877, Koch published his methods of fixing and drying bacterial films on cover slips, of staining them with Weigerts anilin dyes, of staining flagellae and of photographing bacteria for identification and comparison.

In 1878 appeared his great memoir on the etiology of traumatic infectious diseases in which the bacteria of six different kinds of surgical infections are described with the pathological findings. These memoirs elevated Koch to the front rank in medical science.

In 1881 Koch stated that a micro-organism can cause disease only if:—

1. It is always associated with the disease.
2. It can be isolated in pure culture.
3. It will produce disease when inoculated into a healthy susceptible animal.
4. It can be obtained from the inoculated animal in pure culture.

These are called "Koch's Postulates."

When Koch presented his important paper upon the method of obtaining pure cultures of organisms, Pasteur is said to have rushed forward with the exclamation "C'est un grand progress."

In 1882 the Tubercle Bacillus was

discovered by using special culture and staining methods. At the same time, sterilization by dry heat was introduced by Koch and his assistants.

In 1883 Koch visited Egypt and India, discovered the cholera-vibrio and proved its transmission in drinking water, food and clothing. He also discovered the Koch-week's Bacillus in infectious conjunctivitis for which results he obtained a donation of 100,000 marks from the Prussian State. (German coin corresponding to a shilling or twelve annas a mark.)

In 1891, he founded an Institute for infectious diseases in Berlin, in 1892 fought cholera epidemic in Hamburg. In 1893, he wrote the important paper on water borne epidemics, showing how they may be largely prevented by proper filtration. In 1896, Koch also made valuable studies in blackwater fever, tropical malaria, plague, horse-sickness, trypanosomiasis (sleeping sickness) and recurrent fever, also established methods of controlling typhoid which has been adopted almost everywhere.

Koch received the Nobel Prize, in 1905. At the head of the sleeping sickness campaign, he visited Africa in 1906.

Dignified, modest and fair-minded in character, altogether one of the greatest men of science Germany has produced, Koch died of heart failure on 27th May, 1910 at the age of 67. His body was cremated, at his own request, and his ashes deposited in the Institute which he had founded.

2. **Asepsis**. The advance in medicine through *Asepsis* is due to Joseph Lister, born April 5th, 1827, at Upton, Essex. He was the son of a London wine merchant, graduated in medicine from the University of London in 1852, was advised by his teachers to follow surgery under Syme in Edinburgh In 1860 he became a professor of surgery in the University of Glasgow, where he made his greatest contribution to science.

Early in his hospital experience, Lister had been deeply impressed with the high mortality from such surgical pests as septicaemia, pyæmia, erysipelas, tetanus, and hospital gangrene.

Although he constantly employed methods of keeping wounds scrupulously clean, in his own statistics of amputation, he found 45% fatal cases. They were the days of "laudable pus." In 1860 his attention was accidentally drawn to Pasteur's Germ Theory to prevent the development of micro-organisms in wounds, and perceiving that heat sterilization would avail nothing here he turned to chemical antiseptics such as zinc chloride, zinc sulphite and carbolic acid. He boldly applied the antiseptic principle to such conditions as abscesses and all manner of operations, doing as much to extend the domain of surgery as any man of his time.

Modern surgery, it is true, has become almost entirely aseptic in the sense of discarding strong antiseptics in the dressing of wounds. Antisepsis is now the main safeguard of the woman in child birth, Dettol being the most modern antiseptic.

Joseph Lister, after holding very prominent positions in King's College, London, was the first medical man to be raised to the peerage in 1897. He had a winsome personality and gentleness that made him greater. He cherished the love of truth which guided him to the end. That such a man dowered with God's gift of genius should rise to lofty heights and achieve great things was inevitable. When his body was laid to rest in Westminster in February 1912, England had buried the greatest surgeon of the day.

3. **Anaesthesia** The anaesthetic effects of aether had been pointed out by Dr Charles Jackson, to William Thomas Green Morton, born 1819, of Charlton, Massachussetts.

Becoming interested, Morton pushed enquiries further and discovered that aether sulphuric was also an anaesthetic. He then persuaded Dr. Warren of Massachussetts to try this new anaesthetic in surgical procedure without disclosing the name of the drug. In five minutes, a superficial tumour was removed from just below the left jaw When the patient came back to consciousness, he exclaimed "Gentlemen, this is no humbug." Since then, the anaesthetic was used with success. On November 18th, 1846, the discovery was announced to the world by Henry J. Bigelow in Boston Medical and Surgical Journal.

It was due to the high character and repute of such men as Warren and Bigelow that aether anaesthesia was taken up all over the world and became a permanent part of operative surgery.

Morton tried to patent the drug as Letheon but through squabbling with Jackson about their respective legal rights he did not announce it as aether sulphuric until 1847.

Sir James Simpson. Sir James Simpson born at Bathgate, Scotland in 1811, became professor of obstetrics at Edinburgh in 1840. He acquired a great practice through great ability and a fascinating appearance.

Simpson used aether in midwifery practice for the first time in Great Britain, but on 4th November, 1847, he was led to substitute chloroform the great discovery of Leibeg and Guthrie and was so much impressed with its advantages over aether in obstetrics that he published his results a week later.

The effect of these discoveries upon medicine and surgery was remarkable in many ways. The surgeon in pre-anaesthetic days had to rush through an operation at lightning speed and under great disadvantages occasioned by struggles and distress of the patient, could now take his time and perform new operations impossible under old conditions.

The lying-in woman was enabled to confront the fierce pangs of labour with a few whiffs of chloroform. In these fields anaesthesia was in the memorable phrase of Mitchel the "Death of pain".

Bibliography.

History of Medicine– by F.H.Garrison

Extracts from Lectures Nursing school, Vellore (Surgical Nursing)

4. **Radium.** Marie Sklodovski, born 7th November, 1867, in Warsaw, Poland, was the youngest of the five children of Vladislaw Sklodovski a professor, and Madame Sklodovski, a musician and a very accomplished wife.

Receiving her education first in Poland, a very powerful sense of vocation summoned Marie to study in Paris at the faculty of Science in the Sorbonne. In Paris she lived through years of poverty and solitude, and passed first in the masters examination in physics in 1893, and second in mathematics in 1894. While here, she met a man whose genius was akin to hers—Pierre Curie, born in Paris, May 15, 1859—a scientist of genius, a Frenchman on the staff at the Sorbonne, Making important discoveries in physics in Peizo—electricity—a great scientist very nearly unknown in his own country, but already highly esteemed by his foreign colleagues. At the age of 35, he was still a bachelor.

On July 26. 1895, Marie Sklodovski married Pierre Curie—their happiness was unique. Of him she wrote "He was all I could have dreamed at the moment of our union and more, my admiration for his exceptional qualities on a level so rare and high constantly increased so that he sometimes seemed to me like an almost unique being, by his detachment from all vanity and from those pettinesses which one finds in one's self and in others and which one finds with indulgence, though not without aspiring to a more perfect ideal."

Irene, their first child, was born on 12th September, 1897, a future Nobel Prize winner.

Curiosity – a marvellous curiosity, the first virtue of a scientist—was developed in Marie Curie to the highest degree. Studying together compounds of Uranium and Thorium, they found spontaneous rays were emitted. On 12th April, 1898, a distinct name of radio-activity was given, as they were endowed with particular radiance. Henri Becqueral, a Frenchman, was also studying Uranium at this time.

The two brains and four hands of the Curies now sought the unknown element from tons and tons of the pitch blende, reddish in colour from Belgium By July 1898, the discovery of one of these was made and Marie called it Polonium, after her native land, Poland.

In 1902, forty-five months after they announced the existence of a new element, Marie Curie succeeded in preparing a decigram of pure Radium, which is a metal having the highest atomic weight 225 (Gold 197.2).

On December 6, 1904, another plump baby girl was born – Eve Curie – the author of the biography of Madame Curie.

Meanwhile, the incredulous chemists of whom there were still a few, could only bow before the facts and before the super-human strivings of a woman who proved that radium existed. Radium, discovered in France, rapidly conquered foreign countries. Letters came with requests for information from the greatest men in science from Germany, Austria, Denmark and England. The discoverers of radium were lavish with explanation and technical advice to their colleagues.

Science has analysed the properties of radium and discovered that it gives off Alpha Rays α, Beta Rays β, and Gamma Rays γ. The Alpha Ray is a definite form of energy, but is stopped by a piece of paper, the Beta rays are more penetrating than the Alpha and are very caustic and destructive in effect. 1 mm. of Platinum plate stops 99% radiations. Gamma rays are just the same as X-Rays with a very short wave length and are very penetrating. They are equivalent to X Rays from a million volt machine 1000 kilo volts. The gamma rays are the most wonderful of the three and have a tremendous power of penetration and travel at a speed of 185,000 miles a second. They therefore, have a marvellous effect upon malignant growths Radium melts its own weight of ice; one gram of it in complete disintegration evolves 2,900,000 000 calories of heat ; the first product is a gas called Radon, the same amount has a potential energy of 300 tons of coal and the penetrating power as great as some of the naval guns. This precious metal is not to be compared with rubies and diamonds. It is a hundred thousand times as valuable as gold. A hundred tons of pitch blende yield only 18 to 20 grains of radium.

According to the eternal laws of physics and chemistry, radium is also destroyed and requires 2500 years to reduce itself to lead its final product. The last and the most moving miracle of radium is that it can do something for the happiness of human beings, and Henri Becqueral discovered the clinical use of radium in the destruction of cancer cells. Deep X-Ray therapy is also used, discovered by Wilhelm Conrad Roentgen.

Marie Curie had resolved to face love, maternity and science, all three, and to cheat none of them. By an all-mastering passion and will power she was to succeed.

At the time the fame of the two scientists was spreading world-wide. Pierre Curie was lost in a street accident. On April 19, 1906, he went out into a downpour of rain and walked towards the Seine to meet his colleagues The street was hopelessly encumbered, Pierre Curie with

the uneven step of a man in meditation turned into a path of excited and plunging animals pulling a wagon. The scientist slipped on the wet pavement and fell beneath the feet of the powerful horses. He was still alive and unhurt, for his body passed thehorses. A miracle was possible, but the left back wheel of the wagon encountered the feeble obstacle, the human skull, and crushed the brain of Pierre Curie, the brain of a great scientist.

When her life's companion was taken from her by death, in spite of grief, distress and physical illness, Marie Curie continued alone the work that had been begun with him and brilliantly developed the science they created together. She resolved her life into a kind of perpetual giving. To the war-wounded, she gave devoted work and her health suffered. Later on, she gave advice, her wisdom and all the hours of her time to her pupils who come to her from all parts of the world—the future scientists.

In Madame Curie's personality the rock-like foundation of character and the steadfast seeking after true knowledge was combined with an unselfish readiness to give all and take nothing. Neither fame nor adversity could change the exceptional purity of her spirit. She rejected money, comfort and a thousand advantages that genuinely great men may obtain for their immense contribution to human welfare She did not know how to be famous

Her health and strength were failing due to an aplastic pernicious anaemia of rapid feverish development. The bone marrow did not react probably because it had been injured by a long accumulation of radiations. On July 4, 1934, She died at Sancellanoz.

There all in white, her face at peace, as grave and valiant as a knight in armour, she was even in death the noblest and the most beautiful thing on earth. Her rough hands calloused, hardened, deeply burned by radium, were stretched out on the sheet, stiff and motionless, those hands which had worked so much !

On Friday, July 6th, 1934, the coffin of Madame Curie was placed above that of Pierre Curie and into the open grave of the couple of immortal fame her brother and sister, Joseph and Bronya, threw a handful of earth brought from her beloved Poland.

Bibliography.

Madame Curie—by Eve Curie.
Nursing Journal of India—
June 1943, page 208.
Lecture notes by Dr. I.B. Sculder—
Radiologist, Vellore.

Elizabeth Mary Newman (1855-1932)

Pioneer Nurse in Kashmir

Elizabeth Mary Newman was born on April 27th, 1855. While she was still a child her father was injured in a carriage accident and was paralysed for the rest of his life. At the age of thirteen Elizabeth was taken out of school to help with the nursing of her father. For seven years she gave herself in unwearying devotion to his care. The doctor attending was so impressed by her, that he urged her mother to send her to a hospital for nurses' training. So it was that in 1875 she entered the Homoepathic Hospital, Great Ormond Street, London, as a probationer. She excelled at her work, to such an extent that when a nurse was wanted to attend in the Royal Family Elizabeth Newman was the one chosen.

While Miss Newman was matron of a nursing home at St. Leonards-on-Sea, Dr. Fanny Butler visited her and persuaded her to come to Kash-