soft beta rays destroy all cells indiscriminately. Means must accordingly be used to prevent the alpha and soft beta rays from reaching the body. A filter consisting of one millimetre thickness of lead is suitable.

As it is risky to send a patient away with a valuable tube of radium crystals within his body, sealed glass tubes of radium emanation have recently been used (*Lancet*, December 11, 1909). They are enclosed in lead tubing one millimetre in thickness. These tubes of emanation do not differ from the crystals in the rays they emit or in their action; there is, however, one important difference; the radio-active strength of the emanation tube decays according to an exponential law in such a way that the strength is reduced to one-half at the end of about four days. Such tubes, of about 10 milligramme strength, may be placed in contact with a cancerous growth (say in the rectum) and allowed to decay *in situ*. At the end of a fortnight they may be removed, as being then too weak to be of further use.

Other methods have been tried in a few cases; thus, dilute solutions of radium bromide have been given by mouth, and water in which radium emanation has been dissolved has been injected subcutaneously.

Coming now to the results obtained, the accounts are very conflicting. Undoubted relief has been obtained in a considerable proportion of the cases; cancerous tumours have diminished in size, and have disappeared altogether in some cases. But some of the earlier cases reported as cured have since been found to relapse; in some cases the growth has recurred in the original situation, while in others cancerous deposits have formed in internal organs. It seems fairly certain that in some cases cancerous growths may be cured in their early stage by radium, but it is not yet justifiable to attempt this unless the patient is so feeble (through heart disease or Bright's disease, for instance) that the removal of the growth by operation could not be undertaken.

When the surgeon has declared a case inoperable, radium (or Röntgen ray) treatment is used as a last resource, and the attempt is usually a desperate one. It is something, then, to be able to report the complete disappearance of malignant growths in some of these cases, even though the final result is not a cure. The local treatment of cancerous growths does nothing to prevent dissemination of the disease in the internal organs, and it is with the idea of achieving this result that attempts have been made to cause radium or its emanation to circulate through the body. In doing so it must be remembered that the alpha radiation is giving out its full energy in the body; and since this radiation possesses about a hundred times as much energy as the beta and gamma radiation together, it is clear that for practical purposes we may disregard the effect of the gamma radiation in this connection. Now, we started with the postulate that the alpha rays are indiscriminately destructive, so that if enough is allowed to circulate in the body to destroy cancer cells, the normal cells of the body will also be destroyed. It must be allowed, however, that the observations upon which this postulate are founded are by no means conclusive, and though there is no doubt that the alpha and soft beta rays destroy normal cells far more readily than is the case with the gamma rays, it may still be true that they too possess some degree of selective action, if the dosage be regulated with sufficient accuracy.

This branch of therapeutics is still in its infancy, and it would be a mistake either to raise delusive hopes because some cancerous growths have been made to disappear under its use or to declare it useless because disappointments are common. One disease, rodent ulcer, is cured by the use of radium in the great majority of cases, only a few rodent ulcers proving refractory to its use. There are, however, other methods of curing rodent ulcer. The further development of this branch of medical science will be watched with great interest.

A SIMPLE METHOD OF ELECTROPLATING.

AT a meeting of the Royal Society of Arts on February 2, a paper by Mr. A. Rosenberg was read upon an improved method of electroplating. Mr. Rosenberg dispenses altogether with the plating bath and all external sources of electricity. The plating is carried out simply by rubbing on a powder moistened with water. The process is really a refinement of the old contact method. It will be remembered that in this process a piece of metal which it is desired to plate upon is immersed in an electrolyte, for example, one containing a silver solution. In contact with this metal a more electropositive one is placed, also dipping into the electrolyte. This metal, usually zinc, passes into solution, and an electric current thereby is generated. The silver is then plated-out upon the less electro-positive metal.

Mr. Rosenberg employs his electro-positive metal in the form of a fine powder, and generally uses magnesium. This is mixed with a metallic salt or with the powdered metal it is desired to plate-out, and ammonium sulphate or other ammonium salt. In order to plate a piece of metal the powder is moistened with water and rubbed over its surface by means of a piece of rag or a brush. By this means adherent and bright deposits are obtained in about one minute, the thickness of the deposit depending upon the time employed and the quantity of powder used.

The magnesium, being strongly electro-positive, reacts with the moist electrolyte, and goes into solution, causing the metal to be plated-out upon the metallic surface which is being rubbed. In other words, each particle of the powdered magnesium may be said to function as a minute anode. One of the difficulties in electroplating is to plate a substance upon itself. It is easy enough when plating has once commenced, say on a spoon, to give it almost any thickness of deposit; but if the spoon is once withdrawn from the bath and used, it cannot be plated further without first stripping off the old deposit. Mr. Rosenberg claims that with his process this difficulty does not occur.

Another great difficulty in electroplating is the cleansing of the article to be plated; the least trace of grease, even that produced by handling, for example, will prevent an even and adherent deposit. Consequently, articles have, as a rule, to be chemically and mechanically cleaned before being put into the plating bath. With the powder, "Galvanit," of Mr. Rosenberg this is not necessary, because the act of rubbing the powder carries out its own cleansing.

The author's object has been to produce a household method of plating. Thus, when the tinning of saucepans is worn out, the householder has only to polish the inside with the moist "tin Galvanit" to re-tin the saucepan. Spoons from which the silver-plating is partly worn can be re-plated. The "nickel Galvanit" can be used for bicycles and so on. Mr. Rosenberg demonstrated the process before the meeting by plating an iron tube with cadmium, a copper tube with nickel, a penny with silver, and a brass tube with tin.

"Galvanit" can also be used for nickel-facing electrotypes. The process is certainly ingenious, and will no doubt be found useful for small work, but it

is hardly likely to enter into competition with ordinary electroplating for large work or for irregular articles. Nor is it likely to be employed in cases where heavy coatings of metal are required, because it would not be an easy matter to rub on sufficiently evenly to obtain uniform and thick deposits. F. M. P.

UNIVERSITY COLLEGE, LONDON.

APPEAL FOR NEW CHEMICAL LABORATORIES.

MANY old students of University College, London, and others familiar with the work done in the chemical department of the college, will be interested in the appeal which has just been made for funds for new chemical laboratories.

The letter which Lord Rosebery has written as Chancellor of the University, and the statement circulated by Sir Henry Roscoe, as chairman of the Equipment and Endowment Fund Chemistry Appeal Committee, serve to bring into high relief the urgent need at University College for improved and more extensive accommodation in its chemical department, both for teaching and research purposes.

While, thanks largely to the generosity of Mr. Carnegie, the University of Manchester has recently become possessed of adequate and modern laboratories, and fine buildings possessing admirable accommodation for chemical science have been erected at South Kensington—to give two examples only—the University College laboratories date from 1871. Yet, despite material disadvantages, splendid work for chemistry has been accomplished in Gower Street under Graham, Williamson, Sir William Ramsay, and others.

In America to mention the need and to state the sum required would ensure its being immediately forthcoming, especially when it can in a sense be regarded as a means of celebrating the completion by Sir William Ramsay of twenty-one years of work at University College. In Germany, again, the State would see to it that so distinguished a chemist was not hampered by want of material or accommodation.

We are hopeful that a ready response to the appeal will be promptly forthcoming, and that very soon the necessary buildings will be in course of erection. The appeal, and Lord Rosebery's letter referring to it, are subjoined.

An Appeal for 70,000l. for the purchase of a Site and the erection of new Chemical Laboratories thereon at University of London, University College.

The chemical laboratories at University College, London, were for the most part built under the direction of the late Prof. Alexander Williamson in the year 1871. From time to time they have been re-fitted and supplemented to meet the demands of the subject and the increasing number of students in the department. It has been impossible in the present buildings of the college to provide the requisite additional accommodation in rooms immediately adjoining the main laboratories. Consequently, at the present time the department is scattered and inconvenient, and neither in planning nor equipment is it adequate for modern chemistry work. The average number of students in the chemical department for the last four sessions has been 261, of whom, on the average, 160 have been students in the junior classes, 68 students in the advanced laboratories, and 33 research students.

During the last four sessions, the college has been compelled to refuse students for want of room, even after making such arrangements as have been possible for the laboratory work of some students elsewhere. The number of those who desire to do research work under Sir William Ramsay and Prof. Collie has also increased to such an extent that additional accommodation is now a matter of urgent necessity.

The lack of adequate accommodation for the department of chemistry at the college has been carefully considered by the University and college authorities, and the conclusion has been arrived at that nothing short of entirely new buildings can meet the necessities of the case, a conclusion confirmed by the Treasury Commissioners at their last inspection of the college, and also by the University inspectors.

The provision of new buildings for the department of chemistry will greatly benefit other branches of university study now hampered for want of room. The space in the present buildings vacated by the department of chemistry will go some way towards supplying the deficiency of space for other subjects.

It was originally proposed to provide the requisite accommodation for chemistry by erecting the north-west wing of the college on the Gower Street frontage, but a more convenient site has been found fronting Gower Place on the north side of the present buildings of the college. This site has a frontage of about 316 feet and an average depth of 66 feet, with a superficial area of about 20,800 feet, and is suitable in every way for the erection of chemical laboratories. The Senate has acquired an option lasting for a short period to buy this site at an agreed price.

The erection of the north-west wing of the college would necessarily be expensive, because it must be built in Portland stone and correspond in elevation with the remainder of the quadrangle of which it would form part, and for these reasons it would not be suitable for chemical laboratories. It is estimated that the cost could not be less than 70,000l.

For this sum (70,000l.) not only could the freehold of the proposed new site be acquired, but a suitable building for the department of chemistry could also, it is estimated, be erected upon it.

If sufficient money is not immediately forthcoming to complete the whole scheme, the earlier subscriptions will be applied in purchasing the site.

The services to chemical science which have been rendered by Sir William Ramsay, the university professor of general and inorganic chemistry, who has recently completed twenty-one years' work at the college, and the important discoveries that he has made, are generally well known. In addition to these, the number of researches published during the past twenty-two years by members of the staff and students of the chemical department amounts to 331; of these, 72 have been carried out by Sir William Ramsay and collaborators. It is interesting to observe that while the total number of researches published from the department from 1887–1902 was 115, the number issued since 1902, when the laboratories were enlarged, to the present year is already 216.

It is the wish of Sir William Ramsay's friends and of his old students to see his desire for adequate and well-equipped chemical laboratories realised as speedily as possible.

This appeal for 70,000l. for new chemical laboratories is therefore made to all who are interested in the advance of chemical science, and also to all who desire to see university teaching in London developed in accordance with its needs.

Donations or subscriptions, which may be paid in instalments, should be sent to the chairman or the treasurer of the new chemical laboratories fund, and addressed to University College, London.

HENRY E. ROSCOE (*Chairman*).

Letter from the Chancellor of the University.

Dalmeny House,
Edinburgh.
January 23, 1910.

I earnestly hope that the friends of the University of London and the admirers of Sir William Ramsay will cooperate to ensure the success of this appeal for 70,000l. for an academical necessity.

Should the admirers of Sir William Ramsay alone take the matter up in proportion to their zeal and his merits, there can be no doubt of the necessary fund being raised.

But indeed those who are interested in the well-being of our university, either from their association with it or on high public grounds, will, I am sure, spare no effort to ensure the prompt erection of the chemical laboratories so urgently needed for its work.

ROSEBERY (*Chancellor*).