All special symptoms should be treated as they arise. For instance, for toxæmia give plenty of water; for delirium give morphine; for diarrhœa give starch and opium enemata, &c.

During convalescence the patient should be kept quiet, as undue excitement may cause a recrudescence of the disease. Plenty of fresh air should be allowed, but no solid food until the temperature has been normal for at least ten days. Finally, no patient should be discharged until it is certain that he cannot infect others.

ART. XXIX.—*Nephritis after Burns.* By SIR JOHN MOORE, M.A., M.D., M.Ch., D.P.H. Dubl. ; D.Sc. (*Hon. Causâ*), Oxon. ; F.R.C.P.I. ; Honorary Physician to H. M. the King in Ireland ; Senior Physician to the Meath Hospital and County Dublin Infirmary.

In a very able communication on “Nephritis,” read before the Section of Pathology in the Royal Academy of Medicine in Ireland on Friday, January 12, of the present year, and published in the April number of this Journal, my colleague, Dr. William Boxwell, Physician to the Meath Hospital and County Dublin Infirmary, stated that “once in a way it”—that is, nephritis—“follows an extensive burn, though I do not remember having seen such a case.”

In the light of this remark by Dr. Boxwell, the following case may prove of interest.

About midday on Friday, March 9, 1917, while going my morning round, I received an urgent telephonic message to visit an elderly member of the medical profession in Dublin, who had been seriously burned. On hurrying to his residence, I found Dr. S. M., aged eighty-seven years, in a state of considerable mental excitement, exclaiming repeatedly that he was not suffering from

* Read before the Section of Medicine in the Royal Academy of Medicine in Ireland on Friday, May 11, 1917.

“shock.” He reminded me that he was born on February 1, 1831, so that he had entered on his eighty-eighth year.

It appeared that about 10 a.m. he had got out of bed, and preparatory to dressing proceeded to warm himself by standing with his back to a brisk fire, clad only in his night-shirt. Incidentally it may be mentioned that the forenoon of the 9th of March was bitterly cold, snow was falling in light showers, borne on a strong easterly wind. There is no doubt that the unfortunate man's night-shirt was drawn towards the grate by the draught, and so set on fire. The doctor was heard shouting in the hall, into which he ran on perceiving what had happened. His maid-servant rushed downstairs to his assistance and was horrified to find him literally in flames. With great presence of mind she rushed into his bedroom—the front parlour—seized a blanket and wrapped him in it in a shorter time than that in which she could afterwards describe what took place. To her presence of mind and promptness the doctor undoubtedly owed his escape from sudden death.

On his own initiative, he had cold wet cloths applied to the burnt surface and he took an opiate.

When I arrived he was fairly easy, so without waiting to strip off the dressing, I hastened to fetch Lieut.-Colonel William Taylor, P.R.C.S.I., having sent for materials to prepare “Carron Oil” as a first-aid dressing. Surgical advice being at hand, I refrained from subjecting an old man to the fatigue of a double examination.

On Mr. Taylor's arrival we found that there were extensive burns of the third degree—for the sensory nerve-endings were evidently involved—implicating the back of the chest, the shoulders, and the right arm. There were minor lesions on the hands and about the occipital region.

As the materials for making linimentum calcis were at hand, Mr. Taylor used this old-fashioned application, in the first instance. We discussed the picric acid lotion method, but saw no reason to change, especially as Mr.

Taylor had knowledge of toxic effects, in connection with delicate kidneys, having followed the application of picric acid. The burnt surface was dressed twice a day—in the evening by the trained nurse in charge of the patient.

On March 10 the body temperature ranged between 101° and 102° F.; the pulse varied from 88 to 96, and the respirations were steady at 24 per minute. On the evening of March 12 the axillary temperature touched 103° . A daily careful examination failed to detect any evidence of pneumonia.

On March 16 Mr. Taylor changed the dressing of the wounds to a pigment recommended by Lieutenant-Colonel A. J. Hull, F.R.C.S., R.A.M.C. It is composed as follows: Beta-naphthol, one-quarter (0.25) per cent.; oil of eucalyptus, 2 per cent.; olive oil, 5 per cent.; soft paraffin, 67.75 per cent., and hard paraffin, 25 per cent. The mode of preparation consisted in mixing the paraffins and olive oil in a jar, then adding the beta-naphthol and eucalyptus oil at a temperature of 55° C. (132° F.). In the cold weather which prevailed at the time it became necessary to melt the ointment, liniment, or pigment, before it could be painted over the burned surface with a camel's hair brush. This application was anodyne as well as antiseptic, nor did it require to be frequently applied.

Although the temperature fell gradually, the patient's general condition did not improve. His bodily powers began to fail, and he complained of increasing weakness. Restless nights were avoided and quiet sleep was secured by a draught containing 20 minims of nepenthe and 10 minims of tincture of digitalis in an ounce of chloroform water.

On March 20 the temperature, which had been coming down by degrees, rose to 102.5° in the forenoon, and the urine became scanty and was turbid from urates. Remembering that at intervals, in recent years, the urine had been slightly albuminous, I examined it carefully on March 21. It was of normal colour, but somewhat turbid. The reaction was acid. Its specific gravity was 1022. A

moderate quantity of albumen was present. On standing it threw down a considerable and heavy deposit. Under the microscope this was resolved into numerous granular tube casts, and vast numbers of spherules of urate of sodium and of colourless uric acid, as well as hexagons of the latter. These rare forms of uric acid are figured in Dr. Hermann Rieder's *Atlas of Urinary Sediments*,^a Plate XI., Fig. 2, and Plate XXI., Fig. 4; and also in a work published many years previously—namely, Dr. Lionel S. Beale's *Kidney Diseases, Urinary Deposits, and Calculous Disorders*,^b Plate XXVII., Fig. 152, Plate XXVIII., Figs. 155, 156, and Plate XXX., Fig. 166. Going still further back to 1853, we find such uric acid crystals figured in Plate IV. of Dr. Otto Funke's *Atlas der physiologischen Chemie*.^c

A subsequent analysis of the urine on March 25 gave the following results:—Urine of normal colour, slightly turbid, acid; spec. grav. 1018; moderately albuminous, but free from sugar. Under the microscope several leucocytes, epithelial cells, and many filamentous organisms (probably of extraneous origin) are seen, as well as granular and partly hyaline tube-casts. There are some large coloured crystals of uric acid, a few colourless spherical crystals of the same, or of sodium urate.

At this date—March 25—the patient's state was very unsatisfactory and unpromising. His mental and bodily powers were ebbing fast, his tongue was coated and dry, and there was complete failure of appetite.

The last phase was ushered in by a violent shivering fit, lasting twenty minutes, in which the patient's bed shook, at 3 30 o'clock on the afternoon of March 26. This was quickly followed by a rise of temperature to 105° F. The

^a Translated by Frederick Craven Moore, M.Sc., M.D. (Viet.). Edited and annotated by A. Sheridan Delépine, M.B., C.M. (Edin.), B.Sc. London: Charles Griffin & Co. 1899. Large 4to.

^b Third edition: London: John Churchill & Sons. 1869. Demy 8vo.

^c Leipzig: Verlag von Wilhelm Engelmann. 1853. Also as a Supplement to C. G. Lehmann's *Lehrbuch der physiologischen Chemie*.

pulse ran up to 120 and the respirations to 46 in the minute. Next morning the temperature came down to 102°, the pulse to 108, and the respirations to 40. But the patient was drowsy, and when roused incoherent. The first sound of the heart was failing, faint, and prolonged into a murmur.

The end came at 3 a.m. of March 28, after a nephritis of ten days' duration and on the twentieth day from the accident. Regard being had to the extensive nature of the injuries and to the patient's very advanced age (eighty-seven years), his survival for so long as twenty days bears testimony to his wonderful vitality. It was indeed a tragic ending to a long and busy life of kindly service to his fellowmen. A *post-mortem* examination was not obtainable.

Apart from the interest attaching to the uncommon forms assumed by the free uric acid in the urine in this case, the occurrence of nephritis as a sequel of burning deserves consideration.

In an admirable article on "Burns and Scalds" in the second edition of the *Encyclopædia Medica*,* the author, Dr. Alex. Miles, Senior Lecturer on Clinical Surgery, University of Edinburgh; Surgeon, Royal Infirmary, Edinburgh, states that "if the patient survives a few days, active inflammatory signs may supervene in the intestinal canal, lungs, pleura, kidneys, or meninges, and ulceration may follow in the stomach or duodenum. The relative frequency of these lesions may be gathered from the following statistics of 200 cases by Schjerning :—

" Hyperæmia of brain occurred in	-	49	per cent.
Hyperæmia of lungs	"	-	36.5 "
Nephritis	"	-	28.2 "
Pneumonia	"	-	27.0 "
Hyperæmia of intestines	"	-	22.2 "
Pleurisy	"	-	18.8 "
Ulcer of duodenum	"	-	12.4 "
Meningitis	"	-	10.5 "

* Volume II., page 544. Under the general editorship of J. W. Ballantyne, M.D., C.M., F.R.C.P.E. Edinburgh and London: W. Green & Son, Ltd. 1915. Royal 8vo.

In discussing the local treatment of recent burns of the first, second, third, and fourth degrees, Dr. Miles holds that "in picric acid we have an agent which meets all our requirements in a way not previously attained by the older methods. It is employed in solutions varying in strength from 1 in 100, which is practically a saturated watery solution, to 1 in 50 when alcohol is added. It may be dissolved in sulphuric ether forming a solution of about 1 in 20, which is painted on to the affected area, and on the evaporation of the ether leaves a covering of a very fine powder of picric acid.

He adds that a useful lotion of moderate strength is made as follows :—

Take of—Picric acid	-	-	1½ drachms.
„ Absolute alcohol	-	-	3 ounces.
„ Distilled water to	-	-	40 „
Dissolve.			

Dr. Miles states that in a few isolated cases toxic symptoms—nausea, vomiting, diarrhœa, dark-coloured urine, yellowness of skin, and drowsiness—have been alleged to follow its use. "But those"—he adds—"who have had most experience with picric acid have not observed any symptoms attributable to its absorption. The writer, after an experience of over several hundred cases treated by this method, has not yet met with any untoward effects. In young children the solution may be diluted to about half its strength with advantage."

It is to be remembered in connection with this very favourable opinion that Dr. Alex. Miles was one of the pioneers of this method of treatment. His paper "On the Use of Picric Acid as a Primary Dressing for Burns" appeared in the *Scottish Medical and Surgical Journal* in 1897.

The *British Medical Journal*, April 28, 1917 (page 549), reminds us that the paraffin treatment of burns was introduced by Dr. Barthe de Sandfort, of Paris, who described it to the Académie de Médecine rather more than

three years ago.* Under the heading "Paraffin Mask for Burns," the origin and history of the treatment are detailed in the *British Medical Journal*, July 29, 1916 (page 153). In a letter to the *Times* early last year Mr. Albert Gray, C.B., K.C., Chairman of the French Wounded Emergency Fund, drew attention to Dr. Barthe de Sandfort's method of treating burns by paraffin as practised at the St. Nicholas Hospital, Rue Ernest Renan, Issy-les-Moulineux, Paris.

Dr. Sandfort used a proprietary article to which the name "ambrine" was given. He was led by his experience of the mud baths of Dax, in Gascony, to employ the method in rheumatism and arthritis in 1902. In 1903 he began using it as an application, after cleansing the parts, to ulcers and burns, spraying it on at a temperature of 80° C. (176° F.) and even as high as 100° C. (212° F.), without inconvenience. He considered that one chief advantage of the method was that, after the paraffin had solidified, it exercised a slight but long-lasting pressure upon the part. To increase its toughness and suppleness he added a certain proportion of resins, by preference oil of amber (*oleum succini*). Hence the term "ambrine."

In his paper at the Académie Dr. Sandfort stated that under the paraffin shell intense lymphocytosis occurs, followed by the appearance of islets of epithelium. These gradually extend, and Dr. Sandfort asserts that cicatrization finally takes place without contraction.

The writer in the *British Medical Journal* goes on to state that paraffin made fluid by heat has been used for preparing casts of limbs and various other parts of the body, including the head and face.

When Professor Peters, of Toronto, described in that Journal in 1898 a method in which a paraffin spray, followed by an iced-water spray, was employed, the late Mr. Lawson Tait wrote to say that he had used melted paraffin, put on with a rough painter's brush, with the help of a sponge and some iced water in 1864. Dr. E.

* *Bulletin de l'Académie de Médecine de Paris*, April 14, 1914.

MacDowel Cosgrave also stated that he had used a similar method devised by Mr. Joseph Lewis, of Dublin.

The paraffin, or "ambrine," treatment of burns introduced by Médecin-majeur Barthe de Sandfort (late of the French Navy) has been adopted by the Naval Medical Service afloat. Sir Arthur May, the Director-General of the Royal Navy, has favoured the *British Medical Journal* with a description of the spraying apparatus employed at present in the Navy. The apparatus is made for the Service by Messrs. Down Bros., St. Thomas's Street, London, S.E., who supplied the *British Medical Journal* with an explanatory illustration. It will be found at page 549 of the Journal for April 28, 1917.

Another point of interest in connection with the urine, passed in the nephritis stage of this patient's fatal illness, is the uncommon form assumed by the crystallisation of uric acid as regards shape and absence of colour.

Lionel Beale wrote^a :—"Uric acid deposited in urine can generally be distinguished by its colour from other crystalline deposits, although two or three instances have come under my notice in which the crystals were found to be perfectly colourless."

In Rieder's work we read^b :—"Under the microscope uric acid appears as yellow, yellowish-green, brown, or brownish-violet crystals, whose fundamental form is the rhombic prism. . . . Uric acid may also occur in the form of four and six-sided colourless plates of varying size, particularly in leukæmia. . . . They differ from the somewhat similar cystin crystals in not being imbricated and in not being [rapidly] soluble in ammonia; but they are readily dissolved by caustic potash or soda. In addition to these six-sided plates one finds, occasionally, other colourless forms, rounded or oval in shape and having a central depression or radial striation."

The present case does not confirm Dr. Delépine's gloss

^a *Loc. cit.*, p. 371.

^b *Loc. cit.*, pp. 28 and 30.

on the above statement of Dr. Riedel. He adds :—
“These forms are probably never found in acid urines, and are the result of unequal solution of typical crystals, when the urine has become ammoniacal.” In my patient’s case the urine was distinctly acid in reaction, and showed not the least tendency to become ammoniacal.

PERISCOPE.

A “ DUBLIN HOSPITAL ” FOR FRANCE.

WE understand that the War Office has accepted an offer from the Medical Profession of Dublin to staff a base hospital in France for a period of at least a year. The members of the staff will work in relays, no period of service to be less than three months. The selection of the staff has been in the hands of the Presidents of the two Royal Colleges, and within the somewhat narrow limits of age set by the War Office—40 to 55—they have been able to enlist the services of practically all the hospital surgeons and physicians of Dublin who are not already on service. It is hoped that the first party will leave Dublin within the next few days with Professor E. H. Taylor as senior surgeon, and Dr. A. R. Parsons as senior physician. It is clear that by accepting the services of medical men for short periods and by assuring them of employment suitable to their capacities, the War Office can secure men who could not under other conditions offer themselves. We cannot but think that if the War Office had recognised this fact earlier, it would not be reduced to its present straits for medical men. Moreover, the needs of the Army could have been satisfied without such grave disturbance of civil practice as must now occur. An offer from Dublin similar to that now accepted was made a year or two ago and rejected, and similar offers from the Medical Profession of Belfast and of Cork were also refused.—*Medical Press and Circular*, April 25, 1917.