"THE TREATMENT OF BRIGHT'S DISEASE."

G. C. ELLIOTT,
C. M.
M.B., ~~C.~~ M., Edin.

"THE TREATMENT OF BRIGHT'S DISEASE."

The treatment of Bright's Disease has been a subject of unfailing interest, and of no little controversy amongst medical men since the observations of Richard Bright, in the early part of the last century, led that observer to associate a group of symptoms, notably, general dropsy, haematuria, and albuminuria, with a morbid condition of the kidneys.

Since the period which very properly ascribed Bright's name to the disease now recognised as Nephritis, or non-suppurative inflammation of the kidneys, much has been said and written on the subject. Physicians, in their well-meant endeavours to arrive at a satisfactory and successful method of treating so grave and prevalent a disease, have often expended their energies and wit in attempts to prevent, relieve, and remedy, signs and symptoms which, had they been interpreted more correctly, would have led to other and more rational therapeutic measures. Moreover, it would have been here realised that many of the symptoms, which physicians endeavoured to remedy, were efforts on the part of nature to bring about natural relief and recovery.

Indeed, if such attempts at treatment met with so-called success, the result was not only greatly to defeat the ends of nature, and thus worse than useless, but often to disguise or dispel altogether many of our most useful guides to a correct knowledge of the underlying causes of such manifestations, whether pathological or

conservative in their nature.

Although in our more enlightened day, credit cannot be claimed for any decided advancement in the matter of treatment of nephritis in respect to specific medicines, and although it does not appear probable that we ever shall possess specific remedies for a disease with such varied and widely-different causes, still, medical science has, during recent years, provided the clinician with a more correct interpretation of the phenomena presented by acute and chronic nephritis, and a wiser therapeutic application of the indications furnished by a study of such phenomena.

It has been the writer's experience, during a number of years spent in the careful observation of upwards of four hundred cases of pronounced nephritis, both in hospital and private practice, that a consideration of the subjective and objective symptoms of Bright's Disease, provides many valuable opportunities for rational treatment as opposed to empiricism.

The main significance, gained from a study of the natural history of Bright's Disease, is renal inadequacy; but an attempt must be made to decide the extent to which each clinical manifestation is due to the different pathological processes known to be at work, and due to the primary disease within the kidneys.

Before attempting to treat rationally clinical symptoms, a clear perception must be obtained of the individual responsibility of the following factors:-

(a) Febrile reaction.

(b) Morbid processes within the kidneys, which result in changes in the natural renal excretions, and in an interference with the inter-relationship between the kidneys and other organs and tissues, in respect to internal renal secretion and to abnormal products of retention.

(c) General cachexia and autotoxaemia.

(d) Excess or failure of conservative and reparative processes.

(e) General malnutrition.

It will be well before commencing a systematic search for, and consideration of, indications for treatment as they are presented in the course of nephritis, to review briefly its pathology, and to acquire an exact knowledge of the morbid processes in the kidneys, in so far as they are accountable for the modifications in the normal renal functions and the various pathological changes within the body in acute and chronic nephritis.

Dr Loehlein (1) of Leipzig, has recently suggested a pathological classification of acute nephritis founded upon its aetiology.

He maintains that, whenever nephritis is accompanied by dropsy, there is always inflammation of the renal glomeruli; and thinks that nephritis may be divided into

---

(1) Brit.Med.Journal. No 2432. p.321.

three groups.

The first group, those which are dependent upon infection, he divides into two: the form seen in cholera, diphtheria, and most cases of pregnancy, where the parenchyma is affected; a condition in which complete recovery may, and often does, occur, owing to the capacity for regeneration on the part of the tubal epithelium.
The second division of this group, is acute glomerular nephritis of which post-scarlatinal nephritis is typical, where the renal glomeruli are first affected by changes which precede, and are accountable for, those in the tubes.

The second group is chronic parenchymatous nephritis; corresponding to the "large white kidney," which is either an uncured acute glomerular nephritis, or a latent septic glomerular nephritis, such as is seen in chronic suppurations.

The third group consists of those cases of acute nephritis which pass on to the form of granular contracted kidney, where there are marked changes in the renal glomeruli, which can be traced to an original glomerular nephritis.

Dr Loehlein considers that those cases of contracting kidney which become manifest after an interval of many years of good health, following an acute attack, are also to be attributed to glomerular nephritis; and, in his attempt to trace back the origin of the less acute forms of nephritis to changes in the Malpighian bodies, he would appear, at any rate as far as the production of the

cirrhotic kidney is concerned, to revert to the theory propounded many years ago by British pathologists, notably Professor Greenfield of Edinburgh.

The belief held by many modern pathologists that the determining elements in the production of acute and chronic nephritis are inflammatory, and subsequent degenerative changes commencing in the glomeruli, appeals to reason, and appears to be correct; since microscopic pathology has shown that the first renal structures to suffer from the effects of toxins present in the blood are the delicate cells covering the capillary tufts, and lining the glomerular capsules. Further, physiology has taught that the tubules are functionally dependent, both as water channels and excretory structures, upon unimpeded circulation through, and free discharge of water from, the glomeruli.

Whilst maintaining that the earliest and gravest changes occur usually in the glomeruli in Bright's Disease, it is also known that the tubal epithelium, blood-vessels and interstitial tissue, are also generally affected by the same causes which affect the glomeruli.

At the same time, it is held that such changes are, in most cases, secondary to, and usually occur later than (if at all), those in the glomeruli; and, in those cases in which the different renal tissues are affected simultaneously, or when the parenchyma or interstitial tissue are affected to a greater extent than the Malpighian bodies, it seems reasonable to suppose that the specific causes exercise a selective influence upon the parenchyma

and connective tissue. It seems, however, difficult to believe, that the glomeruli ever escape entirely; and it is the writer's opinion that they never do.

It will be best for our present prupose to divide nephritis into three types: (1) acute; (2) chronic parenchymatous; and (3) chronic interstitial, for although, all three forms may have a common origin, and run a consecutive course, they often are distinct and separable diseases, each having its own specific cause, pathology, clinical characters, complications, course, and terminations.

Although authorities are not yet agreed, as to whether lardaceous disease, pure and simple, should be included under the name of Bright's Disease, the fact must be recognised, that waxy degeneration frequently accompanies two at least of the above forms of nephritis, and a subdivision might be made so as to include "lardaceous and catarrhal," and "lardaceous and interstitial."

A kidney, examined with the naked eye in the early stages of nephritis - that is to say, within three weeks from the onset of the disease, is found to be enlarged: the surface is smooth, and may show petechial haemorrhages: the capsule retracts when cut, and strips off easily. On section, the enlargement is seen to be mainly confined to the cortex. The surface of section is dark, from blood which escapes freely from the cut vessels; and, if washed away, the cortical surface is pale in colour, with here and there red points, some of which are the

Malpighian bodies, others small haemorrhages. Yellow lines are seen running through the cortex: these are the uriniferous tubules. The pyramids are deep red.

Under the microscope, the epithelium of the glomerular tufts, and especially that of the capsules, is seen to be proliferated and thickened. The capillaries are congested, and the capsules are filled with an amorphous granular exudation and blood, which compress the tufts, and circulation and the excretion of water are thereby materially interfered with.

The epithelium lining the convoluted tubules, and of those forming the loop of Henle, are found to be in a condition of cloudy swelling and granular, or later, in a state of proliferation and desquamation, and undergoing granular, fatty and colloid degeneration, forming casts which, together with escaped blood lymph and leucocysed block and distend the tubes, impeding the passage of urine, and causing pressure upon the adjacent interlobular vessels, again causing mechanical congestion in the glomerular capillaries.

The interstitial tissue, especially in the regions of Malpighian bodies, and interlobular and straight vessels is infiltrated with a general inflammatory exudation of lymph, leucocytes and proliferated connective tissue cells.

In a state of the kidney, such as described, expressed generally, there exists a condition of acute congestion and inflammation, with retention of the products of such congestion and inflammation, together with

partial or complete suppression of the natural excretions, and secretion of the kidneys.

If the process has gone further, and become sub-acute, the inflammatory changes become more marked; there is a further proliferation of epithelium and a more intense blocking of the tubes. Should the cause of the nephritis be syphilis or prolonged suppuration, there will be found lardaceous changes affecting the capillaries of the glomeruli, with their afferent and efferent vessels and their branches; the interlobular and medullary vessels; and the basement membranes of the collecting tubules; the epithelial cells themselves may be affected by the degeneration.

If it were possible to examine a kidney at a later stage of the condition, when recovery was in progress, there would be found an absence of the general signs of acute congestion and inflammation, less exudation and infiltration in and around the glomerular capsules and renal tubules, and around the interlobular vessels. The tubules would be free from debris, and their epithelial lining would be undergoing processes of regeneration and repair.

In this later stage of the disease, there is a condition of diminished inflammation and tension, with free discharge of urine, and the products of inflammation.

But let it be supposed that satisfactory recovery has not taken place; and, as so frequently happens, the case is one which has drifted to an intractable chronic stage, and one which is typical of the condition known

as granular contracting kidney. The capsule is adherent to the cortex, and is removed with difficulty. Microscopically there is seen an extensive patchy fibrosis, in which there is a great increase in the connective tissue elements, which, in places, has been followed by contraction. The glomeruli in these areas are irregular in their arrangement, and are grouped together more closely than is normal; they are degenerated and atrophied, and some are entirely obliterated. Some of the glomeruli are dilated, forming cysts. The tubules with their epithelium, are atrophied and twisted, and some have been converted into cysts from narrowing and blocking of their lumen. Those tubules which, with their corresponding glomeruli, have recovered from the inflammatory process, or have escaped from the injury attendant upon fibrosis, are found to be potent, and to contain only a little débris or a few hyaline and fatty casts. Under increased vascular pressure, these are able, for a time at least, to carry on the functions of the kidney. In this stage also of the disease, and from causes similar to those in the less chronic form of nephritis, to which, perhaps, may be added nephritis itself, there is found evidence of waxy degeneration affecting the same elements of the kidney structure, as mentioned in the earlier type of nephritis.

There is here, in what might be called the compensatory stage of nephritis, a condition in which the kidneys perform their functions at a disadvantage, and failure may occur at any time should nutrition or extraneous

aid from other organs be withheld.

The rational treatment of Bright's Disease is best discussed from indications furnished by a study of its natural history - that is to say, from its aetiology, pathology, clinical characters, and complications, and course - to its terminations, either in recovery or in death.

The therapeutic measures indicated, by a consideration of the aetiology of nephritis, fall naturally under the headings of preventative and remedial measures.

In dealing with preventative means of treatment first, reference must be made to cold, commonly associated with exhaustion, damp, and alcoholism: in this association also must be remembered, the very probable, though not yet proved, part played by micro-organisms in the production of renal inflammation.

It is generally believed that, after severe exercise, the blood is surcharged with excrementitious materials, and if cutaneous secretion be checked by cold or chill, these irritating substances, together with the blood, are directed towards the kidneys, where they produce a condition of congestion, and increase excretory function, which is too great to be borne by the delicate renal vessels, excretory epithelium, and connective tissue, which are thrown into a state of inflammatory reaction.

A similar perverted physiological process takes part in the production of nephritis complicating scarlet fever,

where there is an excess of metabolic waste material in the blood consequent upon the febrile state, and also a particular susceptibility to chill on the part of the skin during desquamation.

Chill is a potent factor in the production of nephritis, in those subjects who possess a personal or inherited predisposition to chill, and in those individuals in whom there appears to exist a specific liability to nephritis.

Cold may also be a cause of recrudescence in the course of acute or chronic nephritis.

When extensive burns are followed by nephritis, the process by which renal inflammation is caused, is probably the same as that in cold.

The prevention of cold consists in the maintenance of free circulation in, and excretion by, the skin. This is best effected by personal cleanliness, the daily hot water, soap, air or vapour bath; and warmth obtained naturally by suitable clothing, or by environment, such as residence indoors, in bed, or in a warm climate.

If a patient is the subject of acute nephritis, or one of the specific diseases in which nephritis is liable to occur, he must be placed at rest in bed, in a well ventilated room, which must be sufficiently large, in a temperature not less than 60°F. All windows must open at the top; and there should be an open fire-grate. Candles, or electric light, should be the illuminant, and not gas. The patient should be clothed in flannel, which must be frequently changed; he must also be placed in blankets, and not in sheets. Baths, of a kind indicated

by circumstances, must be administered.

During convalescence, the question of change of air, locality and climate, will have to be considered; in severe and protracted cases, the physician will have to decide upon the advisability of his patient's temporary or permanent residence in such temperate and warm regions as the South coast of England or Ireland, or Scilly, the Channel Islands, the Riviera, Egypt or India.

The patient must be instructed to wear a sufficiency of warm clothing, and especially some kind of natural absorbent woollen material next the skin. He must also be warned not to expose himself to extremes of temperature, or to indulge in severe exertion, especially during wet and cold seasons.

The prevention of other causes of nephritis, is mostly quite obvious; it consists in the avoidance of the excessive use, the prolonged employment, the counteraction and elimination of poisons and irritant drugs, which are suspected as causes of nephritis.

It is evident that those general and specific means taken to prevent, arrest, or antagonise the effects of the infective diseases and debilitating and septic conditions, will in themselves tend to prevent involvement of the kidneys. Without going too much into detail, mention may be made of such prophylactic means as antitoxin in diphtheria; mercury and iodide of potassium in syphilis; quinine in malarial fever; and surgical interference, of the nature of excisions and amputations, in

prolonged suppuration in connection with bone.

Nephritis, caused by drain-poison, is naturally prevented by prompt and efficient attention to hygienic surroundings.

Causes which arise within the individual, and which are the results of his own indiscretions in the matter of food, alcohol, or occupation, or are caused by an inherent faulty digestion, hepatic function, or metabolism, with the final production of uric acid instead of urea, may, in a great measure, be prevented by a revision and correction of habits, with regard to food, drink and occupation, and by suitable attention to the organs which are at fault.

Since it is undeniable that those substances, conditions and habits which originate it, also aggravate nephritis, there are certain remedial indications presented by many; and although their presence having been already established, it is impossible to deal successfully with them by preventative measures, the employment of such means must be continued whilst, as far as possible, an attempt is made to eliminate them, and to counteract their actions and effects.

Whilst many of these indications will present themselves again in a study of the natural history of nephritis, they must be dealt with, in so far as they are of importance in a consideration of remedial measures from an aetiological aspect. Here, at first sight, might appear a wide field for pharmaceutical and general thera-

peutic activity; but unfortunately, there are but few specifics likely to destroy, or counteract the effects of the organised toxins present in the blood and kidneys in the infective causes of nephritis, which are not likely to injure the kidneys themselves.

Antitoxins, quinine, mercury and other germicides are employed theoretically; but they must be used cautiously.

Surgical means are employed with greater safety, and give excellent results in certain forms of the disease.

Widowitz (1) advocated the use of urotropine as a prophylactic in nephritis, and considers it a safe drug to employ.

With very beneficial results, the physician controls the quantity and kind of food and alcohol, and orders nourishment in a form least irritating to the kidneys, such as milk and farinaceous foods. Waste materials are, as far as possible, diverted from the kidneys, and eliminated by increasing the activity of the skin and bowels, by warmth, baths, saline diaphoretics, and hydragogue and saline purgatives.

Rest is ordered to diminish the demand for nitrogenous food, thus to reduce the amount of waste material. Whilst it may be found impossible to prevent the production entirely of excrementitious substances, or to bring about their elimination by channels other than the kidneys, yet an effort must be made to render them less irritating, by retaining them in solution, by increasing the alkalinity of the blood plasma by the use of alkalis.

---

(1) Wein. Med.Woch. Oct.1st, 1903.

It is the writer's experience, that very beneficial results follow such prophylactic measures as the prevention and termination of pregnancy in that form of nephritis which so often complicates the reproductive process in women.

The pathological indications for treatment in nephritis are directed towards the vascular reaction, which constitutes so important an element in the process, resulting in congestion of the blood vessels of the kidney, particularly the glomeruli, with consequent pain and suppression of urine; for the relief of which, the writer considers the practice of dry cupping the loins to be the most beneficial. Other means may be employed with the same object. Hot fomentations, poulticing, or leeching the loins, give good results in a certain number of cases. The writer has found the method of continuous hot saline irrigation of the lower bowel of very great value where there is marked suppression of urine.

The prone posture is recommended by some authorities, but it cannot be tolerated for long by the patient, and, in the writer's experience, does not give good results.

Whichever method is used, rest is most essential, and is usually insured by the patient's general condition.

Further indications for treatment are found in a more advanced stage of the disease, and they may be conveniently considered with a view to the relief of tension, the removal of inflammatory products, and the promotion

of repair.

Edebohls[1] was the first to draw attention to the good results on the disease in patients who submitted to Nephropexy for movable kidney, by decortication.

The same author[2] tabulates 18 cases, all females of ages from 19 to 45. All were chronic cases: five of them had chronic interstitial nephritis: in 4 the disease was one-sided: in 14 both kidneys were operated upon. The author was surprised to find unilateral disease. The method of operation was to peel off and excise the true capsule, a procedure which presented no difficulty, or operative fatality: 8 or 9 patients showed a cure within 12 months. These good results the author attributed to increased circulation supplied by the new capsule, which he considered to be rich in blood vessels, the result leading to the absorption of interstitial inflammatory exudates, permitting re-establishment of normal intra-renal circulation.

Reginald Harrison, Rowsing, and others hold that the beneficial results following decapsulation must be attributed to the relief of tension, basing their belief upon the "renal glaucoma" theory. This theory is substantiated by the exhaustive experiments upon animals by P.Rondoni,[3] which prove conclusively that the new capsule formed after decapsulation, though highly cellar, is never rich in blood vessels.

---

(1) Med.News, April 22, '99.

(2) Med.Rec. Dec. 21, '01.

(3) Lo Sperimentale, Florence, '07, p.5.

Rondoni's experiments, moreover, show that the resistance of the kidneys to toxins is not affected by decortication; that it is difficult to strip the renal capsule completely away; and, further, that it is not desirable to do so, for fear of setting up a process of fibrosis in the kidney. From his own experiments, Rondoni concludes that chronic interstitial nephritis is in no way benefited by decapsulation, and that, anatomically, it is aggravated, although he admits that the operation may influence the course of nephritis.favourably.

Maragliano (1) thinks it doubtful if decapsulation is likely to do any good in true Bright's Disease. He gives, as the indications for the operation in acute cases, severe haematuria, severe fixed pain, and threatened anuria.

Jaboulay (2) states that his results, after renal decapsulation, have been very good; and suggests that the cases,in which improvement is too rapid to be accounted for by vascular regeneration, are the outcome of damage to the sympathetic in the pelvis of the kidney by the operation, permitting dilatation of the renal circulation.

Bakes (3) has introduced an improvement in the operation, by bringing out a piece of omentum, and wrapping it round the kidney to insure the presence of large vessels: when this is impossible, he fixes the organ in the peritoneum.

---

(1) Gazz.degli ospedali, April 26, '03.
(2) Arch.Gen.de Med. Nov.17, '03.
(3) Zent.f. Chir. 14, '04.

Puchet[1] gives as indications for operation in chronic cases, signs of renal insufficiency, headache, sleeplessness, and visual troubles, which persist in spite of diet. Uraemia should be treated by decapsulation of the more healthy kidney.

Dilated heart and low arterial tension are contra-indications.

Dr Félix Piéri[2] relates 6 cases, with 4 recoveries, of renal decapsulation in puerperal eclampsia. He not only advocates the operation of decapsulation, but, in some cases, Albarran's complete nephrotomy. Other authorities, including Treub, de Bovis, and Hartmann, strongly oppose the operation in this association.

G.Zinoni,[3] from experiments on dogs, concludes that decapsulation is useless in parenchymatous nephritis, and injurious in interstitial.

There being already a considerable amount of evidence in favour of decapsulation in nephritis for the relief of tension, it would appear probable that it may become an established practice, or, that nephrotomy may become more popular, since it has a wider application in those cases in which it is difficult to remove the renal capsule.

The removal of inflammatory products is of the highest importance in the treatment of acute, and subacute,

---

(1) Rev.Prat.des Mal des org.Gen.Urin. March '05.

(2) Annales de Gynée et d'obstét. May, '07.

(3) Il policlinico. May, '06.

nephritis, and also, although in a less degree, in chronic nephritis.

A review of the pathology of acute and subacute nephritis showed the renal tubes filled and distended with products of inflammation and degeneration which block the water-way, raising the pressure within the glomerular capsules, thus retarding circulation, even to the degree of arrest; and by their distension, the tubules compress the interlobular vessels, thereby causing congestion in the branches of the efferent vessels and the glomerular tufts, with the result that circulation and excretion are further interfered with. The congested vessels may rupture and haemorrhage occur, which affords a certain degree of natural relief; but, at the same time, only adding blood to the material which obstructs the tubes. Obviously the indication here, is to remove the obstructing materials, with a view to the relief of tension and the maintenance of a free flow of urine.

When the urine is scanty, the cause may be either congestion or deficient blood pressure; and, no doubt, the high blood pressure present comes to the aid of the physician in his attempts to clear the obstructed renal tubes.

There are, further, two means of fulfilling the main indications, namely, the relief of congestion, and flushing the tubules.

Means of reducing congestion and inflammatory reaction in the kidneys have already been referred to, and need not be repeated here.

The measures adopted for flushing the kidneys, consist in the maintenance of the free flow of dilute non-irritating urine through the renal tubes, by the administration of copious draughts of bland fluids, mainly water, given as drinks, and the use of alkalis. This method, however, presupposes that the urine can flow freely; therefore, before it can be successfully carried out, means must be employed to reduce congestion and tension, if necessary.

Of fluids for flushing the kidneys, milk is, at once, the most diuretic and the most nourishing: it is specially indicated in the subacute or chronic parenchymatous form of nephritis, which is, of all other forms, the condition in which most interference with circulation and the free flow of urine occurs.

The diuretic effects of milk are not required to the same extent in the granular contracted form of nephritis, since, as has been seen from pathology, before this stage of the disease is reached, most at any rate of the products of inflammation have already been removed; nor is milk here indicated, on account of its constipating effects, and the readiness with which it produces symptoms of gout, especially in those of a gouty diathesis. Other bland fluids may be used in addition to milk, such as soda water, toast water, barley water, and lemonade. Imperial drink is pleasant and slakes thirst; it has the additional advantage of being aperient and diaphoretic, by virtue of the acid tartrate of potassium it contains.

Of drugs, which render the urine alkaline, there is

ample choice. The whole alkaline group, (with the exception of ammonium), and the alkaline earths, are alkalisers of the urine. Their chemical combinations, with the vegetable acids, produce a saline diuretic effect, by stimulating the renal parenchyma, whilst they leave the blood vessels undisturbed.

The potassium salts possess this action in a greater degree than do other alkaline bases; and of these the acetate, acid tartrate, citrate and tartrate are used in the order named. The carbonate and bicarbonate of potassium may be used, as also may the corresponding salts of sodium. The sodium salts are saline diuretics, but they do not possess the property to the same extent as potassium.

The writer is accustomed to combine tartarated soda with other saline diuretics, as suggested by Dr M.Bruce, with good results.

Alkalis, in addition to their purely diuretic action, probably cause detachment and disintegration of the fatty epithelium, and other products of inflammation. They are best given in combination with vegetable acids, for reasons already seen.

Other immediate and remote products of inflammation of a more or less chronic nature, call for removal, and whilst those therapeutic measures applied to the relief of tension in the tubules and vessels, will also promote the removal of the interstitial products of inflammation in acute nephritis, unfortunately few means can yet be said to be of any avail for the removal of fibrosis when

once it is established. Mercury and iodide of potassium are said to promote this result; but the effects of their prolonged trial by the writer are anything but conclusive proof of such a belief. Indeed, most cases of chronic nephritis appear to possess a specific intolerance for mercury: a reduction in volume of the urine passed invariably occurs, and although this may be, in part, accounted for by the very troublesome diarrhoea which is usually produced, there is an increase of albuminuria; and salivation is readily threatened.

Mercury appears to be of very little value in the treatment of fibrosis; its only beneficial effects are apparently due to its action on the bowels.

Iodide of potassium is, in the writer's experience, at least, a safer drug to employ, and its use is followed for a time by an increase in the volume of urine passed; but this is rapidly followed by marked circulatory depression and a diminution of the quantity of urine excreted. Relatively, the amount of albumin passed is not affected; and iodism is not readily induced.

Attempts are now being made to deal with fibrous tissue of inflammatory origin in almost all the tissues, by the injection of Thiosinamin, or Fibyrolysin, and it will, no doubt, be put upon its trial in fibrosis of the kidney also.

The conditions under which repair takes place in the damaged renal glomeruli and tubules, are, by no means, favourable. Unfortunately, they get no rest.

Another element, in the process of successful repair, is nourishment; but nourishment involves increased work for the kidneys. Moreover, the blood, which is supplied to the kidneys, is not in that state of purity which is necessary for repair. Hence, a vicious circle is established which ends in poisoning the original seat of disease - the kidneys themselves.

Yet another condition, unfavourable to repair, is a perversion of the reparative process itself, namely, fibrosis, which exerts its evil effects in all stages of severe nephritis, and contraction with intra-tubular retention are superadded, and retard reparation.

The question the physician must ask himself, is - "How best can I maintain that degree of rest for the kidneys, which is necessary for successful repair, and at the same time supply the required standard of nourishment and purity of blood?"

This is best answered, and the conditions best fulfilled, by careful selection of the diet, attention to elimination by other excretory organs, the skin, bowels, and the relief of dropsy.

Food and drink must be ordered in a form the least stimulating, whilst it must be as nourishing as possible. Stimulants, whether alcohol or flavouring agents, must be forbidden. Flesh meat, in the early stages of acute nephritis, at least, must be withheld.

A milk diet is the one which is at once suggested; and milk, or milk and soda water, toast water, gruel, boiled milk, milk strained off bread, milk thickened with

arrowroot, milk flavoured with tea or coffee, buttermilk, koumis, simple junket, white soups, and, later, as improvement continues, and whilst keeping a careful watch upon the urine, heart and pulse, and such symptoms as headache and dropsy, the practitioner may turn to such foods as bread, baked custard, yolk of egg, fish, chicken, fats, the lighter kinds of meat, dressed vegetables, fruits, etc.

Dr Mitchell Bruce, and Fiessinger[1] recommend half-cooked kidney, and kidney broth as foods in nephritis: they believe that these supply the want of an internal secretion.

The excretory work of the kidneys must be reduced, as far as possible, by increasing the activity of the skin by warmth, baths, hot drinks and diaphoretics, and of the bowels by a daily aperient.

The regular use of a daily aperient is not only indicated, as a routine measure, but the writer has found it necessary on account of the constipating effects of the strict milk diet, which has to be adhered to, in the early stages of acute nephritis.

The relief of dropsy may be left conveniently for the present, as it will have to be considered fully as a clinical symptom.

Certain drugs are of the greatest value, not only by their general tonic effects, but by their specific local action upon the blood and kidneys.

---

(1) Journl.des Prat. Feb. 2nd '07.

Although there is much division of opinion as to the advisability of exhibiting iron to convalescents from acute nephritis, the writer has found it a haematinic of great value.

Iron exerts its specific action upon the blood, entering into combination with the haemoglobin of the red cells, thus increasing their function as carriers of oxygen to the tissues. Iron, in the process of its excretion by the kidneys, exerts a local astringent action upon the blood plasma, controlling haemorrhage and albuminuria.

Iron is best given in its combinations with the vegetable acids, since these compounds are the blandest and, therefore, are the most likely to be tolerated by the alimentary system: they are, at the same time, the least constipating compounds of iron, and they can be given combined with alkalis - a most important consideration - as has already been seen.

Cantharides has often been recommended in the treatment of nephritis, and there seems grounds for supposing that it is of use in suitable cases. Those who have advocated its employment, have insisted upon its use in very minute doses, with periods of rest from the drug.

Cantharides increases the albuminuria, and is contra-indicated in cases complicated by arterio-sclerosis and tuberculosis. (Nyszynska).(1)

Other renal stimulants, such as juniper and scoparium,

(1) Gaz. Hebdom, April, 1897.

must, like cantharides, be used with strict caution.

Pulverenti[1] recommends the use of ergot in acute nephritis. He gives it combined with gallic acid, but considers it contra-indicated, where there are uraemic symptoms or atrophy of the kidney. Ergotin probably acts through the control which it exerts upon the local circulation.

Allison has sanctioned the employment of Thyroid Extract in chronic nephritis complicating scarlatina and diphtheria, but offers no explanation of its mode of action.

Arsenic, in the writer's hands, has proved to be a drug of undoubted value in subacute and chronic nephritis: it no doubt affects the kidneys indirectly, by virtue of its general tonic action in stimulating metabolism.

So far the products of retention in nephritis have been considered, with a view to their removal, in relation to the kidneys themselves; but their effects are not limited to the kidneys. They work backwards upon the blood and general circulation, producing certain chemical and mechanical effects, which are evidenced by various clinical phenomena, notably, anaemia; dropsy; debility; uraemia; cardio-vascular changes; haemorrhages; and urinary disturbances: these objective phenomena are the best clinical indications for treatment. Each of them is full of significance; and many call urgently for treatment,

---

(1) Sem. Méd. p.202, 1896.

either for their removal, or the relief of distress, and especially for the prevention of death.

The onset of acute nephritis is usually ushered in by symptoms of febrile reaction, which is highly suggestive of microbic invasion.

Headache is generally of the frontal type and severe.

Pyrexia may be never high, and usually does not exceed 103°F.

Vomiting is rare, and not usually distressing.

The extent of reduction in the volume of urine excreted in the commencement of acute nephritis, is probably in relative proportion to the degree of congestion in the kidneys.

Lumbar pain is attributable to the same cause, namely, renal congestion: hence, it will be seen that these symptoms do not call for more special attention than that directed to the relief of local congestion, the excitement of diuresis and diaphoresis, the frequent evacuation of the bowels, and a suitable diet.

Albuminuria furnishes very valuable guides to treatment, but its presence does not call for direct interference, nor, in the writer's experience, do the deleterious results, which its loss from the body might be expected to bring about, appear to warrant that amount of unnecessary anxiety, care, and drugging, which has been devoted to the escape of serum by the damaged renal glomeruli.

The quantity of albumin present in the urine, serves as an index of the severity of the local inflammatory

condition; it also furnishes an invaluable guide to the treatment of the local and general morbid processes at work in acute and chronic Bright's Disease.

As will be seen presently, the amount of albuminuria may readily be controlled by general influences such as rest, diet, and certain drugs upon the kidneys, heart, and general circulation.

Haematuria in abundance is evidence of the severity of the renal inflammation; and no doubt the free escape of blood serves to relieve tension in the renal vessels. It is a symptom which, in itself, does not require treatment, only in so far as it contributes to the débris already accumulating in the renal glomeruli and tubes, and assists in the formation of casts.

Levy (1) has drawn attention to the value of Tincture of Guaiacum in the haematuria of nephritis, although he has no explanation of its mode of action.

Tube casts make their appearance early in acute nephritis. The presence in the urine of epithelial, blood, hyaline, granular, and, later, fatty casts, indicate the requirements for their further removal from the renal tubes, by means already discussed.

The discharge, at natural intervals, of a copious volume of urine containing a large number of oil-laden casts, is a test of successful treatment in acute nephritis.

Dropsy, of a renal type, is often the first clinical manifestation of commencing nephritis. This, indeed, is

(1) Med. Register, No.3, 1897.

a condition which might be expected to occur, since the diminished excretion of water, excrementitious material, and inorganic salts, by the kidneys, brings about that condition of plethora, poverty and poisoning of the blood, which is sufficient to cause a degree of tension, temporary damage, or even permanent degeneration of the vessel walls to permit of the transudation of lymph, with the production of dropsy.

The treatment of renal dropsy, as distinct from dropsy of cardiac origin, must be undertaken from two different aspects, namely, remedial and palliative.

An attempt must be made to remedy the pathological processes in which renal dropsy originates, which are represented, as far as our present knowledge shows, by malnutrition and poisoning of the blood and cardio-vascular tissues, increased intraveinous pressure, and probably by a primary retention of sodium chloride in the tissues and tissue fluids.

Hence an effort must be made, as far as the condition of the kidneys will allow, to improve the state of the blood, by suitable nourishment, haematinics and tonics: to increase the tone and vigour of the heart, by food, cardiac tonics and stimulants; and, at the same time, to increase excretion by the skin and bowels.

It has long been known, that in severe nephritis, the amount of chlorides excreted by the kidneys is greatly reduced; but only so recently as during the last decade, have researches proved the association between dropsy and a nephrogenic retention of sodium chloride

whereby water is held back in the system.

Dr A.W.Sykes[1] says: in mild cases of nephritis the relations of sodium chloride to the tissues and urine may be the same as in health, and in other cases the only difference appears to be that when there is an excess taken in with the food, there appears to be some delay before it appears in the urine.

Then, again, in other cases there may be a retention of the salt for some time, perhaps associated with oedema of the tissues.

The amount (of salt) in the urine and system will depend greatly on the quantity taken in the food; there is, however, no certainty as to how an excess of sodium chloride will affect the kidneys: all we know is, that when retention of salt occurs, there is usually associated with it oedema of the tissues.

Opinion is still divided as to whether the retention of salt in the tissues is primary, and so causing a flow of water to the tissues, or, whether the water accumulating from other causes, attracts the chloride from the blood so as to balance the osmotic pressure. Further, some think that the retention of salt in the system may be due to some functional incapacity of the renal cells.

Although, speaking generally, the retention of chloride will involve the development of, or be associated with dropsy, there is at no time an exact relation between

---

(1) Brit.Med.Journal, No.2438, p.733, 1907.

the two. This, Marie has tried to explain by assuming that some chloride could be actually fixed by the tissue cells, and so held in a different condition to that which was present in the tissue fluids.

Professor Strauss, of Berlin, was the first to suggest "Chloride Deprivation" as a means of prevention and treatment of certain forms of renal dropsy. So recently as the present year he has given expression to his latest opinion on the subject.

Strauss lays stress upon the fact that not every case of anasarca of renal origin is necessarily an object for the systematic deprivation of sodium chloride. He believes that it is more especially in cases of acute and chronic parenchymatous nephritis that the question of chloride occurs, whilst the dropsy of chronic interstitial nephritis falls, as far as treatment is concerned, into the same category as that of cardiac origin.

He considers that the treatment may be accepted without hesitation in the well defined dropsy of acute and chronic parenchymatous nephritis; but, at the same time, that there are cases in this group in which the absence of visible anasarca may well cause doubt as to whether the treatment is indicated, or, indeed, permissible.

The author emphasises the fact that a salt-free diet impairs relish and interferes with proper nourishment; and that it should not be imposed indiscriminately.

Hence, a necessity for recognising the signs which, in cases where visble dropsy is absent, point to a tend-

ency towards its occurrence. Such signs, the author points out, are an extremely small daily output of sodium chloride with an average consumption of the salt, and a perceptible and progressive increase in weight, running parallel with the deficient excretion of sodium chloride.

For the detection of the dropsical tendency, Strauss points out the necessity for daily weighing, in addition to the determination of the elimination of sodium chloride. And from his own observations, believes that, without the occurrence of visible dropsy, the body can keep back a considerable quantity of water.

He does not advocate the deprivation of salt as a prophylactic measure in all cases of acute and chronic parenchymatous nephritis, and would employ the treatment only where the indications he mentions are present.

Neither does he suggest that the treatment should be used exclusively; but that it should form merely a part of the treatment of these cases.

With regard to chloride deprivation itself, Strauss thinks that it may be divided into two parts:-

1. The alimentary, or regulation of the intake of chloride into the body.
2. Medicinal, or measures for increasing the output of chloride from the body.

For reducing the chloride intake, those foods should be withheld in which a high percentage of sodium chloride is present either from the first, or is acquired in their preparation.

From experiments conducted by Dr Fischler, of Berlin, it appears that by ordinary methods of preparing food, the raw material of which is poor in sodium chloride, a relatively large percentage of salt can be acquired. This applies especially to soups, prepared meats, and vegetables.

It is not necessary only that a great sparcity of salt should be observed in the preparation of the raw material, but that those foods should be preferred which contain but little sodium chloride in themselves, and which require but little in their preparation.

Amongst such foods may be mentioned, milk, eggs, bread, unsalted butter, and other fats, cheese with a minimum of salt, fruits and vegetables.

The question of the consumption of water is a many-sided one after putting out of consideration those fluids which contain any trace of sodium chloride, and are, of course, excluded.

Strauss states definitely that the deprivation of water alone, without withdrawal of chloride, is purposeless, since the chloride intake remaining undisturbed, thirst will be provoked. The same author also states, that this thirst occurs in response to a necessity of the body, since the accumulation of sodium chloride creates a demand for water, and the water consumed serves the purpose of diluting the sodium chloride in the body juices until their normal concentration point is reached.

The question as to whether, in addition to chloride deprivation, the intake of water should be restricted

also, is a difficult one to answer.

Strauss again states that, in cases of existing or threatened uraemia, at any rate, the intake of water should not be restricted, since dropsy is easier to deal with than uraemia. Even in the absence of uraemia, or symptoms suggesting it, he does not withhold water to such an extent that the patient is tormented with thirst.

On the other hand, it is the writer's opinion that any great excess in the water consumed is undesirable, and may act injuriously in embarrassing the kidneys, and leading to the accumulation of fluid in the tissues; since there appears to be a tendency for the kidneys only to excrete a urine of a definite molecular concentration, and that an excessive addition of water to the diet will not alter this, but will do harm in other ways, such as in the development of dropsy.

In a great many cases the disappearance of dropsy may be brought about by diminishing the ingestion of sodium chloride without restricting the amount of water taken.

For increasing the chloride elimination, Strauss recommends the preparations of caffein, especially Diuretin and Theophyllin, which he gives in combination with digitalis; and states that, following its use, not only is the total quantity of urine increased, but that, notwithstanding the increase in quantity, the percentage of sodium chloride is considerably raised: he attributes the action of caffein to its effects in producing an intense active hyperaemia of the kidneys, and not, as was formerly

held, to direct stimulation of the renal epithelium.

It appears obvious that the treatment of dropsy in parenchymatous nephritis by chloride deprivation, should be attempted in addition to other methods, before resort is had to capillary drainage, or to tapping of effusions into serous cavities, except where causing urgent symptoms by their bulk.

Palliative measures become necessary for the relief of dropsy when it is excessive, to relieve distress and to avert danger which its presence in the tissues and serous cavities entails.

Oedema may be removed successfully by exciting the elimination of water by the skin, bowels and kidneys; or, more certainly, by incisions, or capillary drainage, by means of Southey's tubes, under strict antiseptic precautions.

Dr Wm.Ewart has devised an attractive modification of the method of capillary drainage by puncture: he suggests that the head of the patient's bed should be raised to allow the fluid to gravitate, and that the dropsy, even, should be artificially produced, or increased, by means of Esmarch's bandages, then drained off by means of Southey's tubes.

This method fulfils both the remedial and palliative objects for treatment of dropsy, since the removal of dropsical fluid carries with it accumulations of poisonous waste materials, and affords an additional channel of elimination, and allows a more liberal supply of

nourishment, and stimulants and drugs can be given more safely and with better results: meanwhile, the patient is able to sit up, and massage may be employed to the limbs freed from oedema.

Paracentesis must be employed to remove large dropsical accumulations from the thorax, pericardium, or abdomen.

Anaemia, with its attendant symptoms dyspnoea and palpitation, is a marked feature in all the stages of nephritis; and whilst the striking pallor, which is constantly present, may be due in part to distension of the skin and subcutaneous tissues by fluid in some cases, true anaemia also exists irrespective of oedema.

The cause of anaemia in Bright's Disease may be attributed to the high state of dilution of the blood, and general malnutrition resulting in a failure of haemogenesis.

The indications for treatment, therefore, are to improve nutrition by suitable nourishment, and to restore the blood by haematinics and general tonics; meanwhile, massage should be employed, and attention must be paid to hygiene.

The debility and wasting seen in nephritis further point to a condition of poverty of the system; they also serve to indicate the necessity for increased nourishment and general tonic treatment.

It has been stated that dropsy, anaemia, debility and wasting in nephritis are all evidences of 'poverty,' and it will be well here to mention those drugs, which may be given with benefit in bringing about the necessary changes in the blood itself. The question of diet may be discussed more conveniently later.

Mention has been made already of certain haematinics in relation to local repair in the kidney; a further indication for their use is found in a consideration of the restoration of the blood in nephritis.

Whilst the exhibition of such drugs as iron and arsenic is not called for in the early stage of acute nephritis, their use becomes indicated, and is warranted by the writer's own experience, in the early convalescence of acute nephritis. Iron is also clearly indicated in the anaemia of chronic interstitial nephritis; it should be given, as a haematinic in acute nephritis, in its mildest forms at first; later in the recovery of acute, and chronic nephritis, it is best employed in a stronger form, such as the liquor of the perchloride of iron.

Iron is best administered combined with alkalis, saline diuretics, diaphoretics, and aperients, and such general tonics as arsenic and nux vomica.

In the more chronic forms of the disease, iron may be used with benefit in combination with such renal stimulants as caffein, juniper, broom, and the nitrites.

Arsenic is a very valuable alternative in the treatment of those conditions dependent upon impoverished blood, and the same remarks apply to it generally, as

have been devoted to iron.

High blood pressure, with all its dangers and risks to the patient, must be looked upon as a most important conservative element in acute and chronic Bright's Disease.

A new theory, as to its causation, has been advanced recently by Delaunay,(1) who attributes high blood pressure to an excess in the blood of certain acids, especially intestinal secretion and suprarenal extract; he further assumes that the liver normally has the power of neutralising these substances, and that the liver in nephritis, being functionally disturbed, fails to perform this neutralising function by means of an internal secretion.

Whether this be true, or older theories be correct, in respect to the aetiology of high arterial tension, its result is often successful in effecting an increased flow of urine and a clearing of the impacted tubules.

The indications for the management of arterial pressure in Bright's Disease are most conveniently considered as it occurs in the acute, subacute and chronic stages of the disease; since, although its significance is the same in all stages, the dangers arising from its excess or failure differ widely in each, in respect to their intensity, character, and the period at which they are presented to the practitioner.

---

(1) Gaz. Hebdom des Sei, Med., July 21st, '07.

In acute nephritis, high arterial tension often fulfils a successful physiological purpose in recovery; all ends happily, and special therapeutic interference is not called for.

It is in the subacute parenchymatous, or "large white kidney" stage of nephritis, that high blood pressure first calls for attention, and where one of three events is liable to occur.

First, blood pressure may tell so heavily backwards upon the heart, that the left ventricle being poorly nourished does not hypertrophy sufficiently, fails to empty itself, residual dilatation occurs, with cardiac failure, and early and speedy death ensues.

Several indications are apparent here. A special effort must be made to assist the heart in its work of clearing the obstructed renal tubules. The heart itself must receive special attention, to avoid sudden failure, by rest, a carefully selected diet, cardiac tonics, and stimulants, if deemed necessary.

The second development is one less frequent in young subjects, at least, in subacute nephritis; in it the blood pressure may become too high to be borne by the sclerosed and weakened vessels, with the result that they rupture and haemorrhage occurs in those parts where the vessels receive the least lateral support, particularly the brain, retinae, lungs, and the mucous membranes of the nose, stomach and bowel.

In the event of such a condition being developed, measures must be undertaken to reduce the blood pressure,

by such moderate, though rapid and effectual, means as hydragogue purgation and sweating, which purify and drain the blood; leeching is a means which may be safely employed. These means of reducing blood pressure, in the form of nephritis under consideration, possess the advantage of being comparatively safe, and they may be conveniently repeated, if necessary.

The dangers attendant upon the employment of such strongly depressant measures as venesection and the use of vaso-dilator and vascular depressant drugs must be borne in mind, and they can rarely be called for in the present association.

Should they be considered necessary, all other means failing, a careful watch must be kept upon the condition of the heart, pulse, passive congestions and dropsy.

The third course of events which may take place, the result of high arterial tension, is that the heart may, under favourable circumstances, develop a condition necessary for increased work, and respond successfully to the strain put upon it; but this state of compensation is at a dangerously high level, and the condition of the patient is in the highest degree precarious, as shown by the occurrence of such symptoms as headache, convulsions, vertigo, vomiting, haemorrhages, and diarrhoea; and death may be anticipated from two different sources; firstly, the weakened and atheromatous vessels may rupture and haemorrhage occur into a vital part; secondly, at any time cardiac compensation may fail, dilatation occur, and death ensue suddenly, or more gradually with exacer-

bation of the urinary symptoms and the usual signs of cardiac failure.

This leads to a position in which the management of blood pressure in all the forms of chronic Bright's Disease can conveniently be considered.

It is in the chronic forms of nephritis that the dangers arising from excessive blood pressure are to be feared most; the vessels by this time having become further weakened and atheromatous, aneurismal dilatations having occurred and being most liable to rupture.

Here special precautions must be taken with a view to the avoidance of physical and physiological strain; excessive exertion must be forbidden, and mental excitement and visual strain must be prohibited.

The quantity of food may have, for a time, to be cut down; and depletory measures, such as venesection, purging and sweating employed.

The modern theory, with regard to the causation of arterio-sclerosis, held by Colombo,(1) amongst others, that it results from the sudden changes in blood pressure due to variations in the degree of toxaemia. There is here, therefore, a further indication for those measures which purify the blood, such as purges, diaphoretics, diuretics, and respiratory stimulants.

Colombo believes these measures to be more rational than the use of vascular depressant and vaso-dilator drugs, such as potassium iodide and the nitrites; and he

(1) Ref. Med., June 29th, 1907.

does not consider high frequency currents of much value in the reduction of high blood pressure.

Cardiac compensation is liable to fail in the course of chronic nephritis from insufficiency; moreover, there is a diminished blood supply to the heart through the atheromatous coronary arteries, and its cavities are constantly exposed to the action of toxins. Subjected as it is to these unfavourable circumstances, and called upon constantly to do increased work, the heart sooner or later breaks down; it may be suddenly, or, as more frequently occurs, compensation fails gradually with residual dilatation, valvular incompetency and backward blood pressure with passive congestion of the lungs, portal and alimentary systems, resulting in symptoms of cardiac and pulmonary distress, digestive disturbances, diarrhoea, and cardiac dropsies.

When such a stage of the disease has been reached, little can be done to assist the heart in relation to the kidneys, either to check or arrest the insiduous process at work, or to remove obstructing material from the renal tubules, since the areas of potent kidney tissue are free from obstruction, and the damaged portions are beyond repair.

It results, therefore, that an effort must be made to obtain and maintain that amount of cardiac tone and vigour necessary to avert compensatory failure, by carefully graduated rest and exercise, suitable nourishment, and combinations of such cardiac and general tonics, stimulants, diuretics and hydragogue purgatives as digitalis,

caffein, strophanthus, Strychnine, iron, ammonia, ether, squills, senega and mercury. Meanwhile, routine attention must be devoted to elimination by the skin to assist in the prevention of direct and indirect cardiac poisoning.

The much debated subject of diet in Bright's Disease now calls for consideration. It will be discussed most conveniently, as it is required in acute and chronic nephritis.

It has been shown that the causation of acute nephritis, and the changes, destructive, obstructive and reparative, call for a milk diet.

Dropsy, anaemia, debility and high tension indicate the need for the same kind of diet - for one that is not only nutritious but diuretic, and, in dropsy associated with parenchymatous nephritis, free from salt.

Moreover, milk may be given suitably, during the stage of febrile reaction, when other food would not be tolerated, and certainly not digested.

But an exclusively milk diet has several disadvantages, which are of the greatest importance.

Milk is highly constipating. It readily deranges the liver, and produces gout in some subjects.

Milk is an unattractive and satiating food, which soon comes to be loathed by the patient, if presented to him at regular frequent intervals for any length of time. Nor is milk calculated to establish and maintain a high degree of cardiac hypertrophy and efficiency.

The practitioner must, therefore, exercise judgment

in dieting his patient, being guided by circumstances, such as the volume of urine, dropsy, headache, the amount of albumin, blood, urea and casts, and the condition of the heart, pulse, digestion, bowels, skin and temperature; turning, as soon as advisable, to other preparations and varieties of milk, farinaceous foods, soups, extracts, fish, fowl, the lighter kinds of flesh meat, vegetables and fruits.

An attempt must now be made to settle the difficult question of diet in chronic nephritis.

It has been shown that nourishment is necessary for repair in the kidney, but care must be exercised not to overtax them.

It is necessary to sustain or restore, yet not poison the blood; to preserve a sufficient, but not excessive, blood pressure; and to maintain compensatory cardiac hypertrophy.

These varied requirements for nourishment, with their restrictions, call for a most delicate adjustment by the physician, and he must endeavour to steer a medium course, by a step, first in one, then in another direction, as indications of danger are encountered. He must not be tied down by any inflexible system of regime; and should remember that the nearer the food which is tolerated, approaches that of health, the better.

The effects of different kinds of food should be noted, and acted upon as guides in further treatment.

There can be no doubt, that in the graver forms of the disease and its complications, such as high blood

pressure and uraemia, the elimination of excreta require more important attention than nourishment, since the principal danger lies in excess and not in deficiency.

But it is the writer's experience that this latter conclusion can be, and undoubtedly often is, carried too far in practice in quiescent Bright's Disease.

Rigid restrictions in quantity and kind, in the matter of food and alcohol, in chronic nephritis, have often been carried to excess. The vital importance of nourishment, in relation to repair and hypertrophy, has been overlooked, and patients have suffered and perished from cardiac failure, through being deprived of nutritious food.

V.Noorden has shown by chemical analysis, that the formation of urea from albumin, and its excretion takes place, in ordinary cases of chronic nephritis, with a moderate mixed diet, as well as in health.

A moderate mixed diet, moreover, calls forth a sufficient display of excretory effort on the part of the kidney, to provide that amount of exercise which is so important an element in the arrest of degeneration, the process of repair and maintenance of function.

Whilst an increase of albuminuria may occur with a more liberal supply of nitrogenous food, this, in the writer's experience, is more than compensated for by a gain in weight by the patient, even when unassociated with dropsy.

It is at this point that the general use of alcohol in chronic nephritis must receive brief consideration.

Whilst Colombo and others would rigidly exclude alcohol from the diet in chronic nephritis, as being a cause of arterio-sclerosis, by producing sudden changes in vascular pressures; this appears to be the only argument against its moderate use, and it seems unreasonable to suppose, that alcohol in the form of 2 - 3 oz of light ferruginous wine with the principal meal of the day, can reach the kidneys unchanged, or exert any evil effects upon other organs.

Alcohol in such a form, especially in those who are from life-long habit, accustomed to its regular moderate use, would appear to be indicated to supply an accustomed relish to food, which is greatly missed if withheld.

The main requirements to be fulfilled by diet in Bright's Disease may be tabulated as follows:-

The food must be sufficient in quantity, and the nitrogenous material must not overtax the eliminating organs, especially the kidneys, whilst supplying the demands of metabolism and supporting repair; hence, caution must be exercised in the use of alcohol, flesh meat, and those foods containing much sodium chloride; and a relative excess of milk, farinaceous foods, fats, vegetables and fruits.

The food must be digestible, so as not to derange the stomach, liver and intestines, which would distress the heart, increase uric acid, and raise arterial tension.

The food must be presented in sufficient bulk and variety to be attractive to the patient, in order to increase relish and avoid satiety. Milk may be given in

many varieties of form and variously flavoured. Farinaceous foods in different combinations.

Vegetables may be dressed; and fats temptingly cooked, may be given in a great variety of agreeable forms.

When called upon to treat a case of acute nephritis, the physician must bear in mind that the disease runs a most indefinite course.

Early recovery may take place, or, the disease may be protracted, with various possible complications, relapses may occur, and death ensue; acute may drift into chronic nephritis, which is, in itself, essentially fatal sooner or later.

These circumstances demand the exercise of judgment, patience, and careful watchfulness for unfavourable symptoms as shown by the frequent examination of the urine.and vital organs, and subjective symptoms.

In addition to the routine examination of the urine, with regard to the presence and quantity of such substances as albumin, blood, urea and tube casts; it is important to estimate the quantity of sodium chloride in relation to the amount taken with food, and to the extent of oedema present. The quantity of urea should be estimated so as not to include ammonia, as this may have an important bearing upon the onset of uraemia. The amount of creatinin should be estimated by the method introduced by Folin, as this substance indicates the state of metabolism of the tissue proteins. In estimating the amount

of albumin, globulin should be excluded.

In nephritis the amount of fibrin is diminished, and this is of prognostic value in puerperal eclampsia where there is an increased coagulability of the blood occasioned by the increase in the amount of fibrin.

Systematic examination must be made daily of heart, pulse, lungs, liver, digestive organs and motions. The ocular fundus should be examined frequently; a careful watch must be kept upon the degree of oedema and anaemia; and the patient's weight ascertained daily, if necessary; and due importance must be paid to such symptoms as severe headache, convulsions, sleeplessness, delirium and restlessness, palpitation and dyspnoea.

This is necessary, not only to ascertain progress, but to detect the first signs of relapse, or commencement of complications.

The complications of Bright's Disease are many and varied; they are often the cause of much distress, and frequently result in death.

Uraemia, secondary congestions and inflammations of the lungs and serous membranes, haemorrhages, and intestinal and integumentary inflammations and ulcerations; all these serve to indicate therapeutic measures which must be directed to the primary morbid conditions in the kidneys, as well as to the local phenomena for their prevention, relief and cure.

Whatever be the direct cause of uraemia, it arises, most probably, from a defective breaking down of proteid waste material by the liver, which is handicapped by

deficient excretion by the kidneys, resulting in an accumulation of antecedents of urea, which are probably retained in association with sodium chloride, and possibly aided by the absence of an internal renal secretion, exert their poisonous actions in different ways.

Professor Gautier (1) believes that sodium chloride is necessary for the dialysis of toxins, and that during their retention the chloride is neutralising or fixing in some way the toxins which are afterwards eliminated with them.

Micheleau (2) also points out that the retention of chlorides is one of the most frequent signs of autotoxaemia, and that excessive elimination of chlorides is of great prognostic value.

The indications for treatment in so grave a condition must be met by promptness and thoroughness; distress must be relieved and danger averted, by palliative measures, which must be essentially rapid in their action; and they must be followed by more radical means, with a view to remedying the cause of uraemia, the retention of poisons in the blood, and, as far as possible, the pathological processes in which they originate.

The symptoms of uraemia are acute and chronic; the acute symptoms affect chiefly the nervous system; the chronic affect mainly both the nervous and alimentary systems.

The palliative treatment of the acute symptoms of uraemia may be considered without any distinction as to type,

(1) & (2) Brit.Med.Journal, ep., 199, 1907.

since the symptoms of the fulminating form and the more common type of acute uraemia, differ only in their degree of severity and the success with which they may be treated.

Convulsions occurring in the course of nephritis require immediate palliative treatment.

The patient must be protected from his own convulsive movements: the tongue must be protected; tight clothing must be removed or loosened; and, if the convulsions be continued or repeated, a large dose, half a grain preferably, of morphine should be administered subcutaneously, and followed, if necessary, by a quarter of a grain every two hours until the fits cease; but three grains must not be exceeded in the twenty-four hours.

The administration of chloroform by inhalation, to control convulsions in uraemia, has many advocates, and it certainly is effectual; but its ultimate effects are to be feared.

Dr W.J.Smyly, of Dublin, in speaking of chloroform as a palliative in puerperal eclampsia, says: "The use of chloroform in puerperal eclampsia I abandoned with the greatest reluctance. Nothing is more gratifying to the practitioner himself, and the relatives of the patient, than the complete control of the convulsions by chloroform, but it does not save the patient's life, on the contrary, it increases tht tendency to death."

This conclusion is borne out, by the writer's own experience, in an extensive use of chloroform as a palliative in uraemic convulsions, especially when long-continued and severe.

Chloroform should never be employed with such strong cardiac depressants as chloral, for the relief of uraemic spasm or convulsions; and chloroform should be used sparingly and alone, if at all; a few whiffs will check the convulsions quickly, and though they may return on the removal of the anaesthetic, the effect may be kept up by its occasional use in small quantities, and thus a great deal of the violence of the fits is prevented.

Hyoscin may be employed as an alternative for morphine; but it is not as effectual, even in comparatively large doses, and its effects are better suited to allay maniacal symptoms in uraemia.

Venesection and bleeding from the arm will arrest convulsions of this type; but it is only justifiable if they are violent and persistent. Although, theoretically, bleeding may be of use in removing toxin-laden blood, its use is not to be employed lightly in pronounced renal disease.

Pyrexia may reach 104°F. during the convulsions; but it rarely requires special treatment further than that devoted to the excitement of diaphoresis.

Uraemic dyspnoea, Cheyne-Stokes breathing, and even severe orthopnoea, of a true renal type and central nervous origin, are distressing symptoms in acute uraemia, which always call urgently for relief; but care must be exercised to exclude other frequent causes of breathlessness in nephritis, such as pulmonary congestion and oedema, hydrothorax, cardiac dyspnoea, and pronounced anaemia.

Nitrite of amyl, inhaled from a crushed capsule, gives great relief, and acts quickly in true uraemic dyspnoea; it may be used safely and conveniently.

As substitutes, if at hand, may be used liquor ethyl nitritis, in water; spiritus etheris nitrosi, in water; liquor trinitrin, in water; tabellae trinitrinae; ether, sucked on sugar, is advocated by some writers; but, in the writer's experience, it does not act as well as the nitrites.

A method of treating uraemic dyspnoea by large doses of ether has found favour in France.

Ether is given subcutaneously, and the dose employed is 2 c.c. every hour until diuresis is produced; the total quantity of ether given, in twenty-four hours, is from 60 to 90 c.c. This method is said to be effectual and to possess the advantage of free diuresis; it is heroic but painful.

Sinapisms, leeching and cupping the bases of the lungs are of the greatest value in relieving dyspnoea when associated with pulmonary congestion or oedema.

The palliative treatment of uraemic coma obviously consists in ordinary attention to the patient, such as the removal of defections, and the right lateral cubitus.

Headache, usually of a lateral or occipital type, is often severe and calls for relief; it is often associated with vomiting and relieved along with it.

The ordinary headache of chronic nephritis is greatly relieved by caffein, either as such, or in the form of tea or coffee. Antifebrin, antipyrin, and exalgine re-

lieve this form of headache; but they are not as effectual as caffein. Nitro-glycerine, in the form of liquor trinitrin or tabaella trinitrinae, gives quick relief; but the headache is often even worse after the effects of the drug have passed off.

Uncontrollable vomiting, often accompanied by intense headache, is frequently fatal, and demands very careful palliative treatment.

Physical rest and quiet must be obtained by the recumbent posture in a darkened room; cold evaporating lotions, or very hot sponges should be applied to the head; mild sinapisms or heat should be applied to the epigastrium, and all food must be withheld until the stomach is empty; when sips of very hot, or iced, water may be given. If there is great exhaustion and threatened collapse, a little brandy should be given in effervescing water. In protracted cases nutrient enemata must be resorted to. When vomiting has ceased for some hours, and not until then, attempts at feeding by the mouth may be made; very sparingly at first; milk, or milk and soda water, or pancreatised milk may be given in teaspoonfuls or tablespoonfuls at a time, and gradually increased if tolerated, and other foods carefully substituted.

Medicines only serve to increase vomiting if given too early, and it is doubtful if drugs are of any use in relieving uraemic vomiting; still such gastric sedatives as bismuth, dilute hydrocyanic acid, and carbonate of soda, given in an effervescing mixture, may help to allay irritability of the gastric mucous membrane. Creasote, tinc-

ture of iodine, and nux vomica all have their advocates.

It is invariably found necessary to relieve headache in this association by the use of nitro-glycerine, which acts quickly, and gives great relief: dilute nitric acid gives good results in some cases: cannabis indica is a drug of very variable action, and it cannot be recommended as a remedy for uraemic headache.

Insomnia, associated with restlessness and anxiety, in uraemia, requires special attention.

Before direct hypnotics are used, an attempt should be made to induce sleep by quiet, personal reassurance and abstraction, warmth to the feet, an extra pillow, a darkened room, or sometimes a night-light and light literature may have the desired effect, ventilation, gentle fanning, a hot bath, or hot drinks; these measures failing, the question of drugs must be considered.

It should here be remembered that cardiac debility is frequently a cause of insomnia; and care must be exercised to exclude such a cause, or appropriate remedies applied, if necessary.

Veronal, bromural, trional, potassium bromide, paraldehyde, sulphonal and chloralamide are safe and suitable hypnotics in true uraemic insomnia. They must be given in solution, so as to be quickly absorbed in order to obtain their effects quickly, and to avoid a simple prolonged drowsiness.

Diarrhoea, in uraemia, rarely calls for palliative treatment, moreover, it is best left alone, since it is symptomatic of a toxic condition in the bowel and differs

from diarrhoea of portal congestion; but should it become intolerable and interfere with rest and sleep, it should be treated with bismuth or chalk mixture with or without opium.

Chronic dyspepsia in uraemia, like diarrhoea, is an indication of poisoning, differing also from congestive dyspepsia, and however distressing it may become, little can be done for its relief beyond dieting, and the use of such stomachics, tonics, and bitters, as rhubarb, nux vomica, and gentian, given before food.

Uraemic itching sometimes occurs, and it may become most distressing. It is best relieved by free inanition with soap, in the manner of the soap bath; but it invariably returns after a time.

Uraemic amaurosis, deafness, and paralysis are temporary phenomena which sometimes follow convulsions; but they do not need special attention.

Before any attempt is made to treat radically uraemic symptoms, by such drastic measures as venesection, care must be exercised first to ascertain that the condition is not due to some temporary disturbance, more especially of the kidneys or heart, and not to absolute renal failure.

Time is gained, with this object, by employing those means which are known to act radically and quickly yet more safely, in the removal of the causes of uraemia, whether in the blood or kidneys themselves.

Of these means, in their order of rapidity of action, there are diaphoretics, purgatives, and diuretics; in their order of certainty of action, purgatives, diaphoretics,

and diuretics; and in order of directness of action, diuretics, diaphoretics, purgatives.

They are all valuable, and it will at once be seen that each has its own special indication in the character of the conditions for which they are employed to meet.

Urgent symptoms, such as convulsions, coma, delirium, and severe dyspnoea, call for prompt radical measures, which must be essentially rapid in their action, namely, diaphoretics and purges, in addition to those in daily use, should the patient already be under treatment for acute or chronic nephritis.

On the commencement of any such severe symptoms, the patient must be placed in blankets, and a vapour or hot air bath administered, or a wet pack applied.

Pilocarpine should be administered hypodermically, and one or two drops of croton oil placed on the back of the tongue.

Calomel, placed in the mouth of a comatose patient, rarely reaches the intestines.

If the patient is conscious he may be induced to swallow a draught containing tincture of jaborandi, or calomel or elaterium placed on the tongue.

Diuresis must be encouraged by placing hot stupes on the loins; and if the patient is conscious he should be given hot drinks.

Dr Jardine, of Glasgow, proposes to assist diuresis and to dilute the toxins present in the blood by infusion or intravenous injection of normal saline solution, containing common salt and bicarbonate of potassium; the

diuretic effect he attributes to the latter drug.

In this connection it will be well to refer again to the employment of venesection as a remedial measure in acute uraemia.

It has been said that the loss of blood is not to be desired in pronounced renal disease. On the other hand, venesection may, with benefit, be practised when arterial tension is high, and in strong subjects with chronic nephritis, who have developed uraemia from acute renal congestion due to excessive work and too free living, and exposure to cold and chill.

The use of bleeding is quite rational treatment also in otherwise healthy women post partum, especially when arterial pressure is well sustained, and when the symptoms of uraemia are persistent and severe.

Venesection, practised in addition to Dr Jardine's method, appears rational, and, at any rate, worthy of serious consideration.

When the urgent symptoms of uraemia have responded successfully to treatment, no time must be lost in employing those remedies which act directly, though more slowly, upon the kidneys, and which control blood pressure and oedema, according to the indications present.

Routine attention must be given to excretion by the skin and bowels.

It must also be remembered that the well-marked cachexia, produced in chronic uraemia, may in itself be evidence of greatly disturbed metabolism, such as might well produce abnormal and toxic substances.

The researches of Fiessinger (1) have added greatly to correct management and treatment of uraemia in chronic nephritis.

The author believes that two factors play a part in the production of uraemia in chronic nephritis, namely, the kidneys and heart. He believes that the eliminating power of the kidneys is considerably interfered with by attacks of acute renal congestion, which do not occur when the patient is fed on a diet of milk, vegetables, and a little salt-free flesh meat.

For the relief of renal congestion when it occurs, the author advises linear scarification of the skin over the kidneys, assisted by rest in bed, and a milk and water diet.

In the absence of oedema, cachexia, and increase of weight, a more liberal supply of sodium chloride is allowed with such foods as potatoes, rice, and kidney broth.

It is Fiessinger's belief that cardiac dilatation and feeble ventricular contraction with engorgement of the viscera take part in the production of uraemia, and that a mistake often made is to give too much flesh meat and fluid, and too large doses of digitalis.

He points out that in these cases only very small doses of digitalis should be employed daily for ten or twelve days, interrupted for some ten days, and repeated again for another ten days or so.

During an attack of cardiac dilatation, the patient should be restricted to milk and water in small quantities

(1) Journl. des Prat., Feb,2, 1907.

at a time, and a very gradual return made to other suitable foods. Meat, the author considers, is badly borne in these cases even when taken without salt.

Fiessinger advocates the use of theobromine in all cases associated with high blood pressure and oedema.

Pneumonia, occurring as a complication in the course of Bright's Disease, is a condition of serious import, and it not infrequently terminates fatally.

Care, therefore, must be exercised to sustain, and, if necessary, to assist the already enfeebled vital powers. The attitude of the medical attendant and nurse must be preeminently expectant.

Although, the ordinary therapeutic measures indicated in pneumonia run parallel, in a great measure, with those of nephritis itself, special attention and treatment may have for a time, to be placed in precedence to others more ordinary.

Urgent symptoms will require special treatment.

The heart must be sustained, and cardiac failure averted by suitable nourishment, and the timely employment of such cardiac tonics and stimulants as digitalis, strychnine, ammonia, ether, and alcohol.

Absolute bodily rest is imperative to avoid sudden cardiac failure, and to prevent the occurrence of pulmonary embolism.

Dyspnoea and fatal asphyxia may be prevented by free ventilation; an artificial supply of oxygen; and assisting respiratory movements by posturing, the use of carbon-

ate of ammonium, and the regular four-hourly use of strychnine given hypodermically.

Dyspnoea may further be relieved by accelerating and assisting the heart in its vicarious work of forcing the blood more frequently over the reduced respiratory surface.

If asphyxiation is threatened, venesection, in strong sthenic subjects at least, must be practised, to relieve the over-distended right heart, at the same time to diminish the demand for oxygen, by the removal of over-charged blood.

Hyperaemia, congestion, and products of inflammation may be removed by increasing absorption by such means as the application of heat, or leeches, to the chest, or by the use of cupping, purging, or possibly venesection.

Cough should not be encouraged by expectorants, nor is it to be otherwise interfered with unless distressing.

Pyrexia usually only requires attention, in so far as it adds to the discomfort of the patient, and may be met by suitable light clothing, ventilation, and sponging the dry and hot skin.

Sleeplessness may often be prevented by attention to the personal comfort of the patient in relation to the bed and bed-clothing; refrigeration of the skin, sponging, packing, or a bath; ventilation of the room; the relief of dyspnoea by oxygen; and the prevention of pain and cough by measures directed to the relief of local congestion; and such hypnotics as small doses of morphine guarded by atropine and strychnine; potassium

bromide; sulphonal; paraldehyde; chloralamide; or chloral with digitalis may be used, as they are indicated by the obstinacy, or otherwise, of the insomnia.

Delirium is a grave symptom, especially when it occurs late in the course of pneumonia.

It will require unremitting care and attention on the part of the physician and nurses; and it must be met, as far as possible, by moral control and stimulant treatment, and alcohol may be indicated.

The application of cold to the head and refrigeration of the skin must be tried before depressant drugs are used; but should such means fail, resource may be had to carminatives, such as potassium or ammonium bromide; chloral with digitalis; or morphine with strychnine and atropine.

Critical diarrhoea must be anticipated by the careful use of aperients when they are indicated by any cause; and should it threaten, it must be met promptly by a revision of the diet, after first examining the motions; and the use of such astringents as bismuth and chalk mixture, or mineral acids with opium.

Pleurisy, in nephritis, is a serious complication and sometimes fatal. Its aetiology is evident and the plan of treatment plain.

In addition to dealing with its causation, an effort must be made to control vascular reaction and pain; to promote repair; to insure the removal of inflammatory products; and to prevent, neutralise, or undo the effects

of the morbid process on the affected and related parts.

Pain, if severe, must be relieved by hot applications, sinapisms, blisters, leeching, or cupping, or by insuring rest by strapping the chest. These measures will assist in controlling hyperaemia and congestion, and in preventing effusion. They may, however, prove insufficient to relieve pain, which may, with due precautions, be further relieved by morphine.

Repair must be promoted by general bodily rest in the easiest position suggested by the patient himself; or by strapping both sides of the chest.

Urgent dyspnoea and cyanosis may mean pulmonary involvement, or they may have an entirely different significance and may be evidences of distension of the pleural sac by fluid with pulmonary and cardiac compression and embarrassment.

If such an amount of effusion exists, paracentesis, or incision and drainage will, most probably, be called for, and three circumstances should be accepted as guides to their employment.

Firstly: the time and duration of the effusion.

Secondly: urgency of the symptoms.

Thirdly: the character of the effusion.

On no account should any considerable amount of effusion be allowed to remain in the chest longer than three weeks, unles signs of absorption are present and progressive.

If the fluid be allowed to remain longer, only harm can result; the lung and chest-wall become more and more

impaired in function, and the difficulty of natural absorption increased by thickening of the pleura.

Symptoms, the urgency of which, will indicate the necessity for immediate operation, are many and varied; but some of them must be referred to briefly:

Complete collapse of the lung, as evidenced by the absence of Skodiac resonance at the apex:

Signs of existing pleurisy on the opposite side of the chest:

Signs of bronchitis, oedema, congestion, or pneumonia:

Signs and symptoms of cardiac embarrassment, whether from pressure, or the results of acute or preexisting inflammation of the serous covering or lining of the heart:

Signs of relapse in Bright's Disease itself, or the onset of uraemia:

Indications of the return of effusion, after previous arrest or abatement.

All these circumstances and conditions will require immediate operation.

Purulent effusion will demand immediate incision and drainage.

It must not be forgotten, however, that paracentesis may be practised too soon; the fluid simply reaccumulating steadily.

Apart from urgency and purulency, therefore, the period of waiting, before paracentesis is employed, should be about twelve days at least; but must not be permitted to exceed three weeks.

During the progress and decline in pleurisy in this

association, means must be directed to the fundamental cause, the maintenance of general nutrition and the increase of excretion. These will, in themselves, assist in the process of repair, and help to bring about absorption in pleurisy.

When convelescence is sufficiently advanced to permit, attention should be directed to the expansion of the chest and lung by suitable respiratory and bodily exercises to prevent the effects of fibrous repair in producing adhesions, chronic bronchial catarrh, and, possibly, bronchiectasis.

Bronchitis is a frequent complication in both acute and chronic nephritis; but, since, happily, its results are not so disastrous to the patient as some of the other complications under consideration; it need not be referred to further, than to impress the importance of its prevention, and the necessity for respect for its aetiology in planning appropriate treatment.

Pericarditis is a somewhat rare, though usually fatal, complication in nephritis;- again illustrating the gravity of the original disease, and the virulence of the toxins it produces.

Beyond controlling the degree of toxaemia, with respect to feeding and elimination, little can be done with hope of permanent benefit, to relieve the hyperaemia, pericardial effusion, and associated myocarditis.

There is no known specific with which to treat hopefully this complication, as is the case in pericarditis

of rheumatic origin.

Nor, is it possible to prevent the effects of adhesion, beyond the natural cardiac hypertrophy which is the result, if not already existing.

But, notwithstanding the very pessimistic outlook, an effort can and must be made to relieve discomfort, and, if possible, to prevent death.

Local distress, hyperaemia, and pericardial effusion must be treated by rest, cold in the form of an ice bag, leeching, blistering, or cupping.

Iodide of potassium may be used as an absorbent, if the condition of the circulation permits; but, since the primary indication is the maintenance of the heart, it is more probable that cardiac tonics, such as digitalis and strychnine will be required, and they must be used, if necessary.

If pericardial effusion causes distress, or threatens to endanger life through its excess, and especially if associated with extensive dropsy, it should be treated first by puncture and drainage. Should this not have sufficient effect, paracentesis pericardii should be performed.

If those cases are excluded which result from attempts to tap the abdomen, peritonitis, in the writer's experience, is a rare complication in Bright's Disease.

If proper care be exercised, peritonitis in nephritis is a plastic process, and suppuration does not occur.

A special effort, therefore, must be made to arrest

the inflammation quickly, mainly by rest, and the removal of material, whether causative, inflammatory, or residual.

In this association these considerations hang closely together, and the main points may be considered conveniently together.

Rest for the inflamed peritoneum is best obtained by a diet which must be fluid in small quantities, non-flatulent, and predigested, or, best of all, if administered by the rectum in the form of nutrient enemata or suppositoria.

A further degree of rest may be obtained by the use of saline aperients, which remove gas and faecal accumulations, which, if present, increase peristolsis and prevent the formation of adhesions.

The judicious use of saline aperients has the effect also of depleting the inflamed bowel and peritoneum, and the prevention of a condition of meteorism with all its pressure results.

The consideration of rest in this connection leads to the question whether or not to use opium.

The only rational answer can be - Do not use opium unless all other means fail to produce rest; to relieve pain, thirst and vomiting; and to prevent collapse and death.

Inflammation may be reduced further, absorption promoted, and suppuration prevented, by the application to the abdomen of light ice poultices or leeches.

If suppuration occurs, laparotomy must be considered carefully, and, if advisable, performed. Otherwise, as a last resource, and mainly as a palliative measure, the

intestine may be punctured.

The catheter must be used, if necessary, and opium as an euthanistic.

Haemorrhages have been referred to as frequent occurrences in chronic nephritis. They are evidences of arterial degeneration and excessive blood pressure, and their prevention is one of the most important objects for treatment in chronic nephritis.

The occurrence of epistoxis, haemoptysis, haemotemesis, and melaena may, in a measure, act as safety valves; but their significance must not be allowed to rest here.

Active measures must be commenced without delay to prevent further, and far more serious, results from haemorrhage into the brain, cerebellum, or spinal cord, or their meninges.

Many such measures have been mentioned already, but they must be referred to again, as they apply to the nervous and vascular structures more especially.

The causes in the production of cerebral haemorrhage in nephritis are of vital importance, and must be placed first in consideration; they will be best referred to from the preventative and remedial aspects.

The prevention of cerebral, and allied haemorrhage, from the point of view of their aetiology, consists in preventing excessive arterial pressure, regenerating the arterial walls, and the prevention of determining circumstances.

The ingesta must be limited judiciously, keeping in

view the possibility of circulatory failure, by spare and low diet. Caution must be exercised in the use of such drugs as alcohol, ammonia, digitalis, and strychnine.

Elimination must be encouraged by the daily purge and bath.

Arterial degeneration must be arrested by attention to any specific cause, whether syphilis, or other causes of amyloid degeneration; and an attempt should be made to regenerate the vessel walls, by suitable nourishment and such drugs as iron and arsenic.

Vascular rupture must be avoided by a quiet and uneventful life, with respect to work and pleasure.

Those circumstances which act specially in the causation of cerebral haemorrhage must be prevented by the avoidance of strain, especially in respect to the return of blood from the brain, namely, in holding the breath in lifting, or in straining at stool.

Compression of the cervical veins by tight clothing must be avoided, and stooping must be forbidden.

Whilst mental strain, associated with increased cerebral circulation, cannot be advocated, the effects of compulsory mental inactivity are likely to be worse than moderate intellectual and bodily occupation, in conducing to habits of indolence and indulgence, and, possibly, in the production of cerebral thrombosis and softening.

The remedial treatment of cerebral haemorrhage, from the aetiological aspect, consists in the attainment of three main objects; the reduction of cardiac force, the reduction of vascular pressure, and the encouragement of

the return of veinous blood from the brain.

The objects for treatment here are a decided modification of those in the treatment of haemorrhage generally, since the physician is not concerned with the effects of loss of blood, but with the damage wrought to the delicate structures around and related, and which is progressive if not arrested.

Hence, the patient must be placed at rest in bed; his head and shoulders must be raised; and he should be placed on his side to prevent flexion of the neck, and to aid respiration and avoid cardiac embarrassment.

Cold, or leeches, should be applied to the affected side of the head, or blistering, or cupping employed behind the ear; and warmth should be applied to the extremities.

Pressure may be applied to the carotid artery, or, if blood pressure is high, and excitement great and progressive, more powerful means must be employed, such as venesection, or ligature of one or other carotid artery.

But, whether such radical measures are used or no, an attempt must be made to control the haemorrhage, by administering croton oil, and withholding all food, drink, and stimulants for a time.

Further indications for treatment of cerebral haemorrhage are found in reference to its pathology.

Haemorrhage and vascular reaction around the lesion in the brain may be further arrested by the administration of ergotin hypodermically, and a continuance of those measures already discussed.

All attempts to arouse, or to call forth mental effort, or voluntary movements on the part of the patient, must be rigidly avoided.

Return to feeding must be very gradual, small sips of milk at first. On no account must cough be induced, and for this reason, nourishment is best given in the form of nutrient enemata.

Removal of the products of the lesion can only, in part, be effected by general measures calculated to bring about a return to health.

But no effort must be spared to bring about repair of the damaged nervous structures, and to prevent secondary descending degenerations and muscular atrophy, by carefully graduated exercise of those parts undergoing regeneration and recovery, by the employment of such sensory and mechanical stimulants as electricity and massage. Tonics, such as strychnine and nux vomica, must be used with the same objects.

The clinical phenomena of cerebral haemorrhage require brief consideration.

Coma must be treated by absolute rest. There must be no meddlesome attempts at feeding; to test reflexes; or to search for paralyses.

The catheter must be used, if necessary, and all defections promptly removed.

Paralysis must be treated by tonics, active and passive exercises and electricity, which must on no account be commenced too soon.

Emotion, and other mental symptoms, must be controlled by moral influences.

Finally; the ever present probability of recurrence must not be lost sight of in endeavouring to restore and maintain health subsequent to cerebral haemorrhage.

Haemorrhages into the retinae and vitrious humours and the condition known as Albuminuric retinitis; though the latter is, most probably, a symptom especially associated with chronic uraemia; may be considered together, since the principles involved in their treatment are very closely allied.

Albuminuric retinitis may occur in both acute and chronic nephritis.

Both eyes are usually affected, though not to the same extent.

Although absolute total blindness is rare, it has been shown that a temporary total blindness does sometimes occur in the amaurosis of uraemia.

Even in those cases where the ophthalmoscope shows marked changes in the retinae, improvement and recovery may occur; and the prospects of a return of vision are sufficient to warrant an endeavour to assist the absorption of oedema, hyperaemia, blood, and fatty degeneration; to promote resolution of retinitis; and to prevent optic atrophy, by dry cupping the temples, the foot bath, and the use of iodide of potassium.

Remedial measures must be directed to the cause or general principles, and in those cases associated with albuminuria in pregnancy, very satisfactory results follow the induction of abortion or premature labour.

Preventative means must be employed to avoid exciting causes; visual strain must be forbidden; and direct light must be excluded by darkened spectacles and an eye shade in severe cases.

Purpura often occurs in chronic nephritis; it passes off in time, and requires general treatment only.

Other manifestations of chronic autotoxaemia appear in the skin in chronic Bright's Disease.

Eczema, dermatitis in various forms, and erythemata. They require local, as well as general treatment, in planning which, the gouty element in the production of the primary disease should be remembered.

Erysipelas, fortunately, is rarely seen in the present day, as a complication in nephritis. Its prevention should be one of the objects for the practice of asepsis on the part of the practitioner in all his operations in this association.

An interesting complication of acute nephritis, and one which does not appear to have received attention by writers, is ulceration of the cornea.

The writer has met with two such cases - each occurring in the sixth week from the commencement of nephritis. In both of these cases the ulceration was of the absorption type of ulcer, superficial, and centrally placed upon the cornea, with intense photophobia, and

free lachrymation, but without vascularisation,

These cases of corneal ulceration appeared to be, in some way, associated with oedema, since, in both cases, general nutrition was good, but oedema was intense.

The ulcers in neither case showed improvement whilst treated with yellow precipitate ointment and belladonna, until the oedema commenced to subside, when, simultaneously, recovery began to take place, and to proceed rapidly, although local treatment was continued unchanged, indeed, more rapidly than is usually the case in this type of corneal ulceration in other more common associations.

The inference to be drawn from these occurrences, is the need for the more careful protection of the cornea in the general management of nephritis when oedema is excessive, and for a stricter watch for the first appearance of visual disturbance, pain, excessive lachrymation, or corneal abrasion; and if any of these appear to be indicative of commencing ulceration, special means should be at once undertaken to reduce the dropsy.

Oedema of the glottis is a dangerous complication and sometimes occurs with general anasarca in acute and chronic nephritis. Its symptoms are urgent and there is great danger of asphyxiation.

All available measures must be employed to reduce the general dropsy.

If asphyxia is threatened, a cocaine spray may give relief, otherwise, leeches should be applied over the larynx or scarification employed. If these measures fail,

laryngotomy or tracheotomy must be performed.

Cirrhosis of the liver, although it may have no pathological relation with the primary disease, the frequently common cause must not be forgotten, and the possibility of associated hepatic cirrhosis should be taken into consideration in giving a prognosis before aspirating the abdomen for ascites.

Paracentesis of the abdomen is one of the best and most rapid means of removing ascitic fluid; patients often living for several years without its return, even after repeated tappings.

But the presence of hepatic cirrhosis constitutes all the difference between successful and useless paracentesis for ascites.

The diagnosis of hepatic cirrhosis is a difficult one to make, in the presence of an abundant ascites; but when the certain diagnosis is possible , it is useless to aspirate for ascitic fluid.

The writer, on one occasion, drew off a very large quantity of dropsical fluid from the abdomen, only to find the liver retracted well above the costal margin. In this case the ascites had fully returned in twenty-four hours.

A review of the courses run by acute and chronic nephritis furnishes important guides to rational treatment and management.

Though called acute, few diseases are more liable to become stationary in their course than nephritis of

the acute type. For weeks, and perhaps months, there is little or no improvement, the practitioner has to be content with preventing relapse and complications.

It invariably happens at this stage, that the patient and his friends require to be treated with great tact and careful management to prevent despair and discontent. No effort must be withheld to start the tide of recovery and to prevent acute disease from becoming chronic, by strictness and thoroughness of treatment in every detail.

When, even, convalescence is well established, care must not be relaxed, and attention with regard to rest, physical, as well as for the kidneys themselves, must be continued.

Elimination must be maintained, by the prevention of cold, the daily bath, and regular evacuation of the bowels.

The blood and tissues must be restored by suitable food and tonic medicines. In short, the convalescent from acute nephritis must be treated, and must treat himself, for months, and perhaps years, for threatened chronic nephritis.

Chronic Bright's Disease pursues a course which is preeminently changeful, sometimes disastrously short, on the other hand, often protracted.

Filled as its course is with complications of every kind, and every possible relation to each other, and to the fundamental disease, many of these serious and of an

unexpected character; the attitude of the medical attendant must be one of ever ready watchful expectancy. He must be, at any time, ready to exercise judicious control over unfavourable symptoms.

Although he cannot, in every case, hope successfully to meet the varied phenomena of so grave a disease; the physician can, and undoubtedly often does, succeed in re-establishing and maintaining physiological compensation, averting death, maintaining the balance, and prolonging life, though it may be at a lower level, often when the outlook appears to be most hopeless.

The new, but shortened, lease having been obtained, the practitioner must apply himself to the maintenance of the elementary vital functions, and, as far as possible, to prevent complications by controlling their causes.

As a fatal termination approaches, and death is obviously near, many modifications in the plan of treatment will be required, to reduce suffering to a minimum and to promote mental calm. Attempts to avert death will have to be discontinued, and devoted to making it easy. Many details of treatment with regard to food and medicines will have to be relinquished, and rest, sleep, and euthanasia induced, if necessary, with such narcotics as morphine.