as to the need of constant supervision of the phthisical patient, by his medical attendant. It is required at every part of the treatment. It is particularly necessary in the early stages of the process, when the patient has to be gradually acclimatised to the open air and when the greatest tact has to be used to overcome his prejudices and to combat the constant fear of catching cold or of taking "a chill." The aim is to have perfectly pure air everywhere about the patient day and night, but the air of an inhabited chamber is seldom absolutely pure, as may be judged from the fact that it so rarely contains free ozone. Even with the windows wide open ozone cannot often be detected within it. In the daytime, therefore, it must be our object to have the invalid either in the open or lying down in an open verandah or kiosk for as long a time as possible. In the night-time we have to be satisfied with windows as widely opened as the degree of velocity of the wind will permit. With most patients these objects can only be attained by gentle measures and they have to be led judiciously towards their full attainment, carefully screened from all sensation of draught and thoroughly protected by suitable clothing. When their education in this respect is completed it is remarkable how well they bear exposure to the coldest air and how greedily they seek for it of their own accord. The dread of taking cold soon vanishes when they find how rarely this accident happens in the open air.

The extent to which the patient must assume the recumbent position has also to be carefully regulated. There are some to whom it is only needful for about an hour after each full meal. Others have to lie down most of the time they are in the open, as it is found that they cannot be kept thoroughly warm in any other position. Many of these latter persons have in addition to be submitted to massage in order to keep up muscular tone and to assist nutrition. The amount of exercise and its nature have to be prescribed and its effects watched by the medical attendant, and the amusements permissible have to be rigorously laid down. Whilst the fullest feeding possible has to be aimed at the particular diet each invalid can most readily take and profit by has to be ascertained and the cooking sedulously attended to. Dettweiler's saying, "*Ma cuisine c'est ma pharmacie*," must be taken very seriously. Wonderful results have been obtained by the "stuffing" processes of Debove and Walther, but our aim should be true physiological feeding, an endeavour to nourish the body to the utmost, without overtaxing the eliminatory organs. This object can only be attained by watchful supervision. Baths and bathing also need discrimination in their application, but so applied they are often of great service in carrying out this treatment.

Lastly, without unduly exalting medicinal treatment I am of opinion that it also requires careful study to adapt it to each case. The routine practice of simply ordering a few capsules of creasote or guaiacol, or certain small doses of their carbonates, cannot be said to fulfil all our obligations in this regard. It is for these reasons that I venture to urge upon all general practitioners who have phthisical patients under their charge a very constant attendance upon their invalids and an active interest in their daily management. Without this it cannot be said that the open-air treatment of phthisis, as inaugurated by Dr. Brehmer, has been thoroughly carried out, and not a few failures, such as we have seen returning from Davos and other health resorts, will often be found to have taken place in consequence of shortcomings in the necessary discipline and supervision.

The few patients whom I have been able to induce to try open-air treatment, which I have now to bring before notice, have been, for the most part, under the charge of medical men who have adhered more or less completely to the conditions just formulated. They are only 17 in number, but in all but 2 they were ascertained to be tuberculous by the "bacillus search." In the two cases no sputum was obtainable and one of them was a child, aged four years, with signs of a cavity at the apex of an entirely consolidated lung. This may have been non-tuberculous.³ The period of time during which they have been under observation is too short to justify any conclusions as to the likelihood of complete cure; it is only possible to point to evidences of improvement in their general condition and of, at any rate temporary, quiescence of the disease. A number (6 or 7) of obviously hopeless cases, in which the disease progressed

from bad to worse, but in which from the outset some degree of open-air treatment was tried, have been omitted from the list; but it may be mentioned that even in these cases there was apparent some amelioration in their condition from the use of abundant aeration. It will be found from the Table, in which I have summarised the more complete cases, that 2 of them gained about 28 lb. in weight during the treatment; 1 gained 19 lb.; 9 others gained weights varying from 5 lb. to 12 lb.; 1 was stationary, and of 4 the weight was not taken. In 7 cases the disease is quiescent now and has been for periods of from one year to two and a half years. Most of these may probably be put down as deserving of Dettweiler's designation of "relative cures." 5 others are also now quiescent and have been quiet for periods of from four to six months, and these must still be regarded as under suspicion; 1 is simply noted as having improved, and 3 as having improved for a time and then relapsed, the disease now progressing. The child mentioned as being a doubtful case has now entirely recovered. As I have already remarked these results are still inconclusive, but so far as they go they seem favourable to a more prolonged trial of the system. They compare favourably with the results which we were in the habit of obtaining from the older methods of treatment, combined simply with free ventilation, without such systematic exposure to the open air. They are at least not less favourable than those reported from the various sanatoria on the continent.

Bournemouth.

AN IMPROVEMENT IN COLOTOMY.¹

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SINCE Mr. H. A. Reeves published his first cases of iliac colotomy in 1882 there has been a continuous improvement in general results. Numerous suggestions have been made, some of which have stood the test of time and prevail whilst others, having contributed towards the evolution of the present practice, have dropped out of use. To judge from such opportunities as I have of observing general surgical results I should say that the operation of colotomy in ordinary hospital practice is very much more successful than it used to be. The mortality is probably as low as under present conditions we have any right to expect and the inconvenience of prolapsed bowel is much less frequent. There still remains, however, the drawback that the patient has practically no control over the act of defecation. Even when the motions are well formed and the bowels are moved only once a day that motion must be passed, no matter how inconvenient the occasion, whenever reflex contractions occur in the colon. At various times I have had trusses made for colotomy patients, but whether designed to relieve prolapse or unconscious defecation they have never been a genuine success. In the matter of control the artificial anus resulting from colotomy is not only greatly inferior to the natural orifice but is much less perfect than the artificial anus obtained after excision of the rectum. The most complaisant operator will probably allow that there is room for improvement in this direction.

The suggestion I have to make is the adoption for colotomy of the principle introduced by Hahn into the operation of gastrostomy and now, as slightly modified by Frank, commonly used in that operation. The principle is that a portion of the viscus is withdrawn from the abdomen by a direct wound, attached to the deeper part of this wound, and then passed under the superficial tissues and opened on the surface at a distance. This method of performing gastrostomy is most successful in preventing leakage of the contents of the stomach and it appeared to me that it might prove equally valuable as applied to the colon. The plan adopted is as follows. An incision is made at the usual site in the line of the internal oblique fibres. The sigmoid is withdrawn and attached to the deep part of the wound by one or two sutures only and it is then passed directly backwards for about 2 in. to 2½ in. between the external and internal oblique muscles, where it is brought to the surface, opened and sutured, the original wound being completely closed.

³ 10 showed signs of excavation, 5 were in the second stage and 2 were in the first.

¹ Abstract of a paper read before the St. Helen's Medical Society on Feb. 1th, 1893.

I have operated on three cases, on two as above, but in the third case by dividing the bowel, the rectal end being brought out at the lower end of the original wound, and the upper end being passed between the tissues and brought out posteriorly. The artificial anus in this case was a very good one, but the other opening emitted a foul discharge from the cancer which did not yield to treatment, and was more unpleasant than when such discharge is passed *per anum*. Division of the bowel considerably increases the severity of the operation, and I think I should only be inclined to practise it where there was a long expectation of life and in a case in which the sigmoid did not accommodate itself, owing to mesentery or bulk, to the other method. This operation appears to me to be a decided improvement on the ordinary colotomy. The artificial anus has a most natural look, but there does not seem to be, as I at first hoped there would have been, any natural control over the act of defecation. Whether the abdominal muscles could be trained to act in this way after a time I cannot say, but at any rate a truss applied as in the figure with a horseshoe

An improved colotomy. 1, The original wound closed. 2, The artificial anus. 3, Salmon and Ody truss with horseshoe pad.

pad seems to act admirably. It compresses the bowel where it runs in the abdominal wall, and quite prevents the escape of faeces until it is removed. This operation takes rather longer than a simple iliac colotomy, but it is not at all severe. Two of the patients were old men with advanced cancer of the rectum and both stood the operation well. The third patient was a woman with incurable syphilitic stricture; she has, I hope, many years to live. It is certainly an advantage that by this method the bowel may be opened at once without any fear of contaminating the peritoneum. The devious track and the ease with which the distant orifice can be perfectly and closely sutured to the skin remove all danger on this score. For some years I have always opened my colotomies at once through a glass tube, but am glad to feel that it is quite safe to return to the old plan of completing the operation outright. At the same time I would not advise the adoption of this method in all cases, and as a matter of fact have not used it in the last two. When the mesentery is very short it would not often be desirable to divide the bowel, as would be necessary under those circumstances, nor could this operation be conveniently performed in any but the sigmoid region. In cases of complete obstruction with distension, also, the glass tube method would generally be preferable; but, after all, the vast majority of colotomies are performed in the sigmoid region and upon patients with sufficient stamina and sufficiently long mesenteries to render the operation, as I have described it above, quite feasible.²

Liverpool.

² A fourth case recently completed has proved quite successful with the help of the truss.

THE VALUE OF CERTAIN DRUGS IN THE TREATMENT OF GOUT.

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Two methods of treating gout, and especially chronic gout, have for some time past been more or less employed by medical men. They are treatment by means of alkalies and treatment by means of salicylates. As far as I can discover these methods of treatment both originated from the supposition that uric acid is present as such in the fluids and deposits of gouty subjects and that this uric acid was rendered soluble and was therefore removed from the system both by alkalies and by salicylates. It is now well known that uric acid is always present in gouty subjects either in the form of sodium quadriurate or biurate. It is also well known that the chemical and physical properties of both these substances are entirely different from those of uric acid. As it therefore appeared to me that the object of employing alkalies and salicylates in gout originated in a misconception, and as I have for some time believed that both these methods of treatment are wrong in principle and in action, I thought it desirable to submit the matter to experimental investigation.

REASONS FOR BELIEVING THE TREATMENT OF GOUT BY ALKALIES TO BE ERRONEOUS.

The treatment of gout by alkalies is mainly based on the assumptions that uric acid is present as such in the blood and tissues and is rendered soluble by the administration of alkalies, that uratic deposits of sodium biurate are dissolved by alkalies, and that the system of a gouty person is pervaded by a general acidity which is neutralised and removed by alkalies. It will be seen that these assumptions do not stand the test of experimental inquiry. With regard to the first assumption, it is now well known that in gouty subjects uric acid is never present as such in the blood and tissues, but is always combined with sodium as the quadriurate or biurate. The only way in which alkalies could beneficially affect the quadriurate would be to delay its conversion into the biurate. In order to test this point I conducted a series of experiments so as to ascertain the effect of artificial blood serum to which different alkalies had been added on the decomposition of sodium quadriurate. In all the experiments the artificial blood serum employed was Sir W. Roberts's standard solution.¹ This was employed instead of blood serum in order to obviate the objections which have been raised to the use of blood serum in such experiments—viz.,—The tendency to variations in its alkalinity. Moreover, as shown by Sir W. Roberts, this standard solution reacts with uric acid and with the quadriurates and biurates in the same manner as blood serum itself.

OBJECTS OF CONDUCTING THE EXPERIMENTS WITH SODIUM QUADRIURATE.

These experiments were undertaken in order to ascertain whether any of the drugs ordinarily employed in the alkaline treatment of gout possess any power when introduced into the circulation of restraining the precipitation of sodium biurate from the quadriurate contained in the blood. Such experiments would show whether any such drugs would be of use either in delaying or partially arresting an attack of gout or in lessening the formation of gouty deposits. When sodium quadriurate is mixed with water it is decomposed into a uric acid moiety and a sodium biurate moiety, the uric acid appearing immediately it is set free in the form of ovoid or spindle-shaped crystals. These crystals appear in a very short time after the contact of the quadriurate with water—generally in from one to five minutes—whilst the sodium biurate passes into the gelatinous form, which, if sufficient water be present, is dissolved. If instead of water an alkaline medium be employed to decompose the quadriurate, such as blood serum or artificial blood serum at the temperature of the human body, then as long as free alkaline carbonate is present the uric acid moiety of the quadriurate, instead of crystallising out as uric acid,

¹ Croonian Lectures, 1892, p. 76.