On March 18th an incision four inches long was made in the median line, beginning just below the ensiform cartilage. No evidence of malignancy was found, but the pyloric end of stomach was adherent to liver and gall-bladder, and there was evidence of an old adhesive peritonitis. The gall-bladder was contracted from side to side, but elongated, its fundus being attached to the stomach by old and firm adhesions. These adhesions were dissected from the stomach until the gall-bladder was perfectly free. The pylorus was extensively thickened and tightly constricted—probably by the cicatrization of an old gastric ulcer. An incision three inches long was then made longitudinally in the pylorus, directly through the constriction, extending into both stomach and duodenum. The longitudinal incision was converted into a lozenge or a broad V by removing a considerable portion of the cicatrix of the anterior wall of the pylorus (Fig. 6). By bringing together the opposing surfaces of duodenum and stomach an abundant artificial lumen was procured. The mucous membrane was first united by a continuous suture; the peritoneum by an interrupted Lembert of silk. Two gauze wicks were then placed on either side of the line of sutures, and the abdominal wound was closed with interrupted silkworm-gut sutures. The patient recovered from ether well. He vomited once, about an hour after coming out of ether. The vomitus consisted mostly of blood. The patient was very comfortable during the night, after a suppository of one-fourth grain of morphine.

March 19th. The patient was in good condition; there was no distention or abdominal tenderness. The following enema was given every few hours: Brandy, salt solution, beef juice each one ounce; eggs; tr. op. deod. m. x. There was good movement of bowels this morning. On March 20th the patient passed a comfortable night. This morning one pint salt solution by rectum was well retained. At noon to-day, forty-eight hours after operation, peptogenic milk, one drachm every hour, by mouth, was well borne. There was no vomiting or gastric distress. This evening peptogenic milk was increased to three drachms every two hours, with sips of water at frequent intervals. On March 21st the liquids were increased to peptogenic milk every two hours, with port wine one drachm, every four hours. The wound was redressed. One wick was taken out, the other loosened. On March 22d the liquids were increased to peptogenic milk, one ounce every four hours. The patient complains of no gastric distress. On March 23d the second wick was taken out. The wound was healed by first intention, except for a small granulating area where the wick was. Peptogenic milk, four ounces, was given every four hours; beef tea, two ounces every four hours, egg-nog with sherry, half an ounce. On March 26th all the stitches were out. Peptogenic milk and beef tea were omitted. The regular liquid diet—soups, milk, etc.—was given, eight ounces every four hours.

The patient was discharged relieved. He reported several times after discharge. At one time it seemed probable that there was a recurrence of the pyloric disturbance. The last heard from him, through Dr. Morris, was that he was doing very well.

THE HOSPITAL FOR CHRONIC DISEASE.¹

BY E. W. TAYLOR, M.D., BOSTON,
Visiting Neurologist, Long Island Hospital, Boston Harbor.

WITH the striking increase in hospital development which has marked the last few years, the victim of chronic disease has received but a small share of attention. Popular sentiment has demanded that the acutely sick be given the first care, a feeling with which no one would wish to take issue. The limitations of our hospitals have required that space be

given to those whose needs are immediate, and whose ailments are capable of palliation or cure; residence in the wards is discouraged beyond a certain period, both on account of the necessity of making room for others, and for reasons of expense. This is as it should be. We have not yet attained to a great hospital in the sense of an all-inclusive one, where cases of long as of short duration may alike be treated. The necessity of discrimination is apparent, and may, no doubt, most conveniently be made between the so-called acute and chronic diseases. The inevitable result is that the victim of a chronic disease suffers, and often suffers severely, for want of the skilled treatment which it would seem an enlightened community should provide. His needs, it may be, are not immediate, his treatment may not demand heroic measures, but he requires above all that constant care which a properly equipped institution can alone give. Without that care it is hard to conceive a more wretched illness and death than is likely to fall to his lot amid the increasing squalor of a home rendered destitute by the length of his illness. There is certainly no class of persons more demanding of sympathy from a purely humanitarian standpoint. Within the last few years a decided advance has been made in the establishment of hospitals for certain classes of disease, ordinarily not accepted at general hospitals. I refer particularly to institutions for the treatment and care of tuberculosis; even in these, however, the preference is, and at present must be, given to those in whom treatment is likely to be efficacious. The fatally ill are therefore seldom gainers, and their disease must still run its course, a constant menace to their associates. With but few exceptions, and those absolutely inadequate to the needs, the sufferer from chronic disease remains an outcast, for whom the community provides no shelter, except under the declaration of absolute dependence.

The time will no doubt come in our country, as it has in others, when the sentiment of the medical profession, as of the people at large, will demand and find the means of providing institutions for the sick so comprehensive in scope that no worthy person who is diseased and disabled from whatever cause will be rejected. We are, however, far removed as yet from that consummation. We must recognize the conditions as they are, and make the most of present opportunities. That we have not even done that is sufficiently obvious. As at present organized, the hospitals in which chronic disease is treated are, with the exception of the hospitals for the insane and various smaller institutions, connected with almshouses. This is true of Massachusetts and Boston, and also, so far as I am aware, of other American cities. The development of these almshouse hospitals has lagged behind that of others for various reasons. Prejudice, politics, lack of scientific interest, a superficial feeling of the hopelessness of treatment have all entered in. Yet it is in these institutions that the first step must undoubtedly be made toward a broader spirit of scientific inquiry and toward a more liberal conception of the privileges and duties of medical charity.

Before entering upon what seem to me the very hopeful possibilities of the present situation in Boston toward the development of its almshouse hospital into a highly creditable institution it will be well to consider briefly the value of the hospital for chronic disease in general. This would appear hardly necessary

¹ Read at a meeting of the Suffolk District Medical Society, October 28, 1899.

had we not in this community been so slow in recognizing and taking advantage of our opportunities.

In the first place, the hospital for chronic disease is in no respect different from the hospital for acute disease in that it should subserve two chief purposes: first, the care of the sick in the best possible way, and secondly, as a centre for medical investigation and medical teaching. Experience has amply shown that the union of these two purposes conduces to the greatest possible efficiency and the maximum of usefulness. The patients are, as a class, benefited by the greater degree of attention bestowed upon them, and the physicians in charge and students are stimulated to better work through the possibility afforded them of investigation and study, and hence indirectly the community at large is the gainer. These arguments apply with peculiar force to the hospital for chronic disease. As already indicated, ordinary motives of humanity demand that we should provide proper hospital care for those sick with disabling or lingering disease. They need it badly. This aspect of the question is so self-evident that it certainly requires no extended exposition.

When, however, we turn to the general attitude of physicians toward this problem of chronic disease and its treatment, we are apt to meet with a discouraging apathy. We are told that one can do nothing for such cases, that they are not interesting from a medical standpoint, that little is to be learned from them, and that their care is a simple matter of nursing. This attitude, which is undoubtedly prevalent, is most sincerely to be deprecated. It implies a certain small and narrow view of the aims and problems of medicine, which should be combated at every turn. Evidently much may be done for the chronic sick in many cases, and something, no doubt, in all. The benefit to persons suffering from tuberculosis in its various forms is a case in point. We have had ample demonstration in Massachusetts of the effects of hospital treatment for lung tuberculosis; continued hospital care for persons with tuberculosis of bone, with the resultant deformities, is absolutely essential in many instances to the permanency of relief. That benefit may result from the hospital care of any of the chronic degenerative processes of internal organs, we are certainly in no position to deny; that symptoms may be palliated, when the underlying condition is beyond control, is self-evident. These in themselves are sufficient reasons for the establishment and maintenance of a hospital for chronic disease. As for such cases being uninteresting and uninteresting—that depends wholly upon the attitude of the physician toward his professional work. If he be merely superficial and seeking only for immediate results, his interest will naturally flag; if he looks below the surface, he will find many of the problems of medicine offered him in most attractive form, which can hardly fail to claim his deepest interest. He has the completest control of his patients; he may watch for many years the development of morbid conditions and study the signs and symptoms and ultimately the post-mortem appearances connected with them with a completeness which otherwise would be quite impossible. That such work is valuable and indispensable in a progressive medical community seems evident. The material always may be found in a hospital for chronic disease; it is rather the enthusiasm for investigation that is lacking. It seems to me, therefore, that the physician, certainly in

many lines, should find in such hospitals a congenial field for positive and highly profitable scientific work.

The next proposition should meet with still less opposition, and that is, that a hospital for chronic disease is an invaluable adjunct to medical teaching. It goes without saying that very many conditions may be seen and studied to best advantage in hospitals devoted to the care of the acutely sick. Such, for example, are surgical disorders, fevers and the acute exanthemata. Training in the recognition and treatment of these conditions the student must certainly have, but we deprive him of a great deal when we fail to give him the opportunity of studying the course of disease as it manifests itself at varying intervals. The degenerative affections, which form so large a proportion of the diseases of adult life, cannot be properly studied by an investigation at any given moment; they demand a painstaking study extending throughout the course of the disease, in the same sense that a knowledge of typhoid fever demands study from its earliest prodromal symptoms to its terminal stages. A complaint, and to my mind a very just one, made by the medical student is that he fails to gain a definite idea of the progress of disease and of the effects of treatment during the short time a patient is at his disposal for purposes of study. This is, of course, peculiarly true of chronic disease. A student must in great measure learn for himself in after life what should have been a fundamental part of his earliest instruction. The hospital for chronic disease offers just the needed opportunity. Patients are there under complete control; the vagaries of their several diseases may be studied from month to month and year to year; the details of symptoms as they arise may be followed and tabulated; the influence of drugs may be investigated, and a knowledge of the natural history of disease made a part of the student's medical equipment. It is hard to conceive of the great foreign hospitals, like the Charité in Berlin, for example, deprived of their wards for chronic disease. They would at once lose much of their significance as teaching centres. Without such wards, where patients may be kept an indefinite time, it is evident that the student's ideas must remain fragmentary on many most important points. What can he know, for instance, of the day-to-day effect of the treatment of syphilis, or of the later aspects, when treatment is often most demanded, of many diseases of the nervous system? Argument in this line is, however, surely unnecessary. What I have said is offered merely as a protest against the too-broadly disseminated idea that an adequate clinical experience may be given students by the use merely of patients acutely sick. Until we have wards in all our hospitals for the main forms of chronic disease, they will fall far short of their possibilities for purposes of broad-minded medical teaching.

These, then, are some of the reasons which should lead us to take an active interest in the development of institutions for chronic disease; that the victims of chronic disease need the best possible care; that physicians may find among this class of patients a broad field for scientific research; that students require the instruction which the study of such cases can alone give.

When we face the facts regarding the development of a hospital on a broad scale for chronic disease in this community, we find that up to within a very few years nothing had been attempted. There have been

such institutions, as of necessity there must be in any large city, but they have never excited the interest of the medical profession at large, and have therefore subserved their function in an inadequate way. What we want is a hospital for chronic disease, which will take rank with the best of our hospitals for acute disease, and which will completely fulfil the ideal of a hospital in that it will receive worthy patients needing medical assistance until they have recovered or have died.

It will be many years before philanthropy or public spirit will set aside funds sufficient to establish and maintain such an institution. In the meantime the city is forced to take care of its dependent poor, and the almshouse and almshouse hospital have come into existence. This public institution is now situated on Long Island, in Boston Harbor, and is accessible only by boat. Its location is salubrious and desirable in certain essential respects, but inconvenient, as any island deprived of constant communication with the mainland must be. Like many city institutions, this one has had its vicissitudes; it has in the last few years passed through various jurisdictions, each of which has left it with definite marks of improvement. The present management, and it is to be hoped it may be permanent, is through a board of unpaid trustees. The hospital connected with this institution numbers about three hundred beds. The building is adequate to the work, but somewhat old-fashioned in construction, and designed rather for an infirmary than a hospital in the modern sense of the word. The first step toward direct medical supervision of the hospital and its patients was made in 1895, when a visiting staff was appointed by the institutions' commissioner. Since that time visits of varying but, on the whole, increasing frequency have been made by members of the staff, and through this means and the constant co-operation of those in authority, the hospital has gradually but steadily emerged from its former condition as a mere refuge for the hopelessly sick into a hospital which should prove of wide usefulness to the community. We are hardly prepared as yet to say that more than a beginning has been made; the continuance of the work must depend in great measure upon the interest taken by the people at large and particularly by the medical profession, for it is only through such means that the financial support necessary is likely to be forthcoming. To excite public interest in this phase of the city's charity is no easy task, but it may certainly be done ultimately by the demonstration that the hospital is doing creditable work for a class of patients whose needs are great and who are worthy objects of medical care. As at present organized, with four resident medical officers and a responsible visiting staff, the hospital is in a position to care for any case which comes within its scope. The establishment of a training school for nurses has worked a transformation in the appearance and discipline of the wards, and has already demonstrated the wisdom of its foundation. There is ample opportunity for practical training and for experience in the work which properly belongs to nursing. What I have already said of the value of the hospital for chronic disease in general applies to the Long Island Hospital in particular. Attention to its development will benefit the patients, as has already been shown in a large number of instances. Closer attention to the patients will undoubtedly benefit the physicians in charge and lead to investiga-

tions of value, and, finally, the possibility of using the hospital as a centre for teaching will increase its range of usefulness as nothing else could.

Certain departments of the hospital's work are perhaps worthy of special mention. In the first place, its ward for syphilis. At present the city has no adequate means of detention of persons ill with syphilis. The Long Island Hospital theoretically permits of detention by order of the physician in charge. The arrangement is in many ways unsatisfactory, but it may, and should, lead to a more rigid system, which will finally bring the disease under absolute legal control. A hospital in which such cases are treated in the wards must be the starting point of more enlightened action in caring for this dangerous class.

Patients ill with diseases of the nervous system naturally form a large contingent of the inmates of the hospital. To those interested in this line of work a unique opportunity for investigation is offered. Remembering the Salpêtrière and its history, one has no hesitation in saying that such an institution offers the very broadest field for neurological work. Disease processes are seen there in their simplicity and in their complexity, and always in sufficient number to make comparisons profitable and instructive; one's regret is that such a material should so long have been cut off from medical instruction.

Finally, this institution should do much to further the study of pathological anatomy. The organic lesions, the understanding of which is so fundamentally important to the student of medicine, may be seen in greatest variety and abundance. Here again this hospital supplements others in providing material which is not readily obtainable elsewhere. In this department of the hospital's work we have accomplished gratifying results, largely through the indefatigable enthusiasm of Dr. G. B. Magrath, who tells me that within a year he has done about fifty autopsies. This material has been studied and used, and has formed the basis of the only systematic instruction which has yet been attempted.

These are some of the reasons which lead me to have confidence in the successful future of the hospital. To accomplish this end it must be well administered in each of its departments.

When all is said, however, the fact remains that it is a pauper institution and must struggle under the stigma which that unfortunate term implies. It seems quite unreasonable that a patient sick for six months should be the city's charge without comment, and with no loss of esteem, while the patient likely to be sick for as many years should be placed under the ban of pauperism before he is admitted to hospital care. Dr. Henry Jackson has so forcibly expressed this inconsistency, in a letter recently received from him, that I quote it with his permission:

"I regret that I cannot hear your paper next Saturday, especially as I should like to propose a radical change in the assignment of cases to our chronic hospitals. I feel that admission to our chronic hospitals at Long Island and Tewksbury should be on the same basis as admission to the other hospitals, unhampered by the stigma of a pauper institution. I realize that it is only the question of a name, and yet people dread to apply for admission to the hospital of the poor-house, who would only too gladly go to a hospital for chronic disease. I am certain that hereby we do an injustice to many worthy people, and from a financial

standpoint cause much unnecessary waste, in that patients are admitted for two or three months to the City Hospital, without any material gain to the individuals. I have expressed these views to Mayor Quincy. If you agree with me I wish you would say so at the meeting, and thereby perhaps inaugurate a reform that would prove a blessing to thousands. In other countries there are hospitals for chronic cases as well as for acute cases, but in Boston a person with a chronic disease must acknowledge that he is a pauper before he can be admitted to any public hospital."

With this statement of the case I should entirely agree. Some action must soon be taken in the direction indicated by Dr. Jackson if the Long Island Hospital and institutions of its type are to fulfil their completest function in caring for the chronic sick in a way consistent with justice and humanity.

THE NUTRITIVE VALUE OF ALBUMOSE PEPTONE.¹

BY A. E. AUSTIN, A.M., M.D., BOSTON.

THE term "peptone" has been used incorrectly for a long time to represent the digested product of albumin, irrespective of whether any separation of the albumoses and peptones has been effected or not. Practically, however, all peptones which have been placed upon the market, like Witte's peptone or somatose, consist of a mixture of peptone and albumose in varying proportions, dependent upon the aggressiveness of the digesting agent as well as the length of time the digestion is allowed to continue. This must of necessity be true; because (1) as is well known, any enzyme is soon rendered inactive by the products of its own activity, so that no albuminous digestion can be carried to its final product, peptone; and (2) the separation of these two products requires so much time and care, while the amount of product obtained is so small, that pure peptone is probably never seen except in the laboratory, and never commercially. Nor is separation of any importance except as a matter of chemical interest, for practically it has been shown² that albumose is equally as well absorbed as peptone; and even under certain circumstances acid albumin itself may be absorbed. This presupposes, of course, some change in its passage of the intestinal wall, for in the blood we meet only the native albumins. Whether we are to suppose that this change takes place by the action of the cells of the mucous membrane or of the white blood corpuscles, which are so enormously increased during digestion, we do not know; probably the latter. At any rate, it has been proven when peptone is injected directly into the blood it appears almost at once as albumose peptone in the urine, and the animal suffers more or less.³ That this is due to the presence of peptone, and not to the accompanying peptotoxin of Brieger, has been fully proven. We must also take into consideration, as substantiating this fact, that as soon as the peptone becomes absorbed in the usual manner, that is, through the intestinal wall, its toxicity is lost. On the other hand, in some experiments conducted by me under Liebrich, I was unable to show that Witte's

peptone lost a large portion of its toxicity when injected, if it were previously extracted with alcohol, and then only the purified peptone injected. Rabbits, one kilogramme in weight, easily withstood an amount of the substance thus treated, which had previously proved fatal to rabbits of like weight.

But it is not with this phase of the subject that we wish to interest ourselves in the following work, but rather with the actual value of peptone preparations as food stuffs. Of course, under normal conditions, one would not think of employing such preparations, for the native albumins, casein, globulin, hemoglobin, and the like, are readily and easily converted into assimilable and absorbable forms of nutriment by the digestive juices; but rather in those cases where from disease the peptonizing functions of the various ferments are lost or very much impaired. We could mention many such, atrophy of stomach mucosa, cancer, malignant disease of the pancreas, etc., in all of which digestion suffered most seriously. It, of course, can make no difference in what form the albumin is absorbed; it must always serve as a source of power to the body; a portion of the same must also serve to replace the cells which daily disintegrate and are lost. In the latter case the cells must be formed from the converted products of the absorbable albumin, that is, albumose peptone; and from feeding experiments we can learn whether such digestive products can fully replace the native albumin in the formation of cells. This has been answered in the affirmative by v. Gerlach,⁴ E. Pfeiffer,⁵ etc., but their experiments were carried out during a period of only ten to fifteen days; a period much too short to settle a matter of this importance. Both of these investigators found what, as we shall see later, was not met with by me, an irritation of the stomach and intestines, as evidenced by diarrhea and nausea.

My experiments were performed with a solution of albumose peptone⁶ containing 12 per cent. alcohol for preservative purposes. At first it was necessary to determine its value in terms of nitrogen, for no matter in what form albuminous food may appear, its actual nutritive value depends upon the amount of nitrogen which it contains. This was determined by the Kjeldahl process, and it was found that in every 250 cubic centimetres of this fluid there were 3.85 grammes of nitrogen in the form of albumose peptone, entirely albumin free, for it could not be precipitated by heat, but was precipitated by acids and redissolved by heating, tests amply sufficient to identify this substance as albumose peptone. According to Hammersten, this would be equivalent to 118 grammes of lean beef or 24.06 grammes of albumin; or by actual quantitative determination, one gramme of Witte's peptone is found to contain 0.0532 gramme of nitrogen, and hence 250 cubic centimetres of this solution contain 72.4 grammes of albumose peptone.

I. FEEDING WITH ALBUMOSE PEPTONE ALONE DURING THE FIRST PERIOD OF SIX DAYS.

A dog weighing 10.88 kilogrammes was given 250 cubic centimetres of this mixture daily, and as the dog refused to take it, the fluid was poured into the dog's stomach through a stomach tube. The dog re-

¹ From the Chemical Laboratory of Tufts College Medical School.
² E. Brucke: Ueber die Pepton-theorien. Sitzungsber. d. Wiener Akad., Bd. 59, II, S. 617, 1889.

³ F. Hofmeister: Ueber das Schicksal des Peptones im Blute. Zeit. f. physiolog. Chemie, S. 127, 1881.

⁴ V. Gerlach: Die Peptone in ihrer wissenschaftlichen und praktischen Bedeutung. Hamburg u. Leipzig, 1891, S. 63.

⁵ E. Pfeiffer: Berliner klin. Wochenschrift, Bd. 32, No. 30, 1885.

⁶ This solution was furnished me by the Bovox Co., Salem, and is sold by them under the name of Hemapectos.