to a certain dose of the drug or to a certain number of renewals, as it may interfere with the administration of the drugs in cases in which human suffering is intense. This matter should be left entirely to the physician's moral responsibility.

Heavy penalty with imprisonment should be imposed on those who will sell or give away the drugs without regular prescriptions. Heavy penalty with imprisonment should be imposed on those who will forge a physician's prescription.

Besides a legislative prophylaxis there is a medical prophylaxis. Morphinism usually occurs in individuals with a special make-up of their nervous system. Such persons present deficiency of the intellectual and moral faculties. In them the deficient inhibitory power becomes an easy prey for all abnormal tendencies, particularly for morphinism or cocaineism. The latter are the result of a neuropathic constitution, the fruit of hereditary tendencies.

In handling such individuals, one should remember Ball's dictum, to wit: "Morphinomania is entered by the door of pain, of sexual passion, of sorrow, also by the door of contagion, viz., imitation."

THE QUESTION OF RESPONSIBILITY.

We have seen above what order of mental disturbances are present in acute and chronic intoxication.

In the *acute* form, mental excitement, delirium and hallucinations with incoherence are the usual psychic manifestations. They resemble, therefore, the symptoms of acute alcoholic intoxication. When a criminal act is committed by an individual who is in a delirious state and has hallucinations, who is then incapable of distinguishing between right and wrong, whose cerebral functions are then in a state of dissociation, such an individual can not be considered responsible for his acts from a medical standpoint.

When the patient is only in a state of mild agitation, without a delirious or hallucinatory state, or in a mildly stuporous condition, the responsibility is complete. Partial responsibility should be admitted when the patient has recovered from the immediate effects of acute intoxication, but remains for weeks, as we have seen in some of my cases, mentally dull, apathetic, with lack of sustained attention and difficulty of comprehension.

In the *chronic* form of morphinism and cocaineism the impairment or disappearance of the moral sense, deficiency of the will power and even a mild diminution of intellectual faculties do not entirely exempt a morphin habitué from responsibility; the latter is only partial. When delusive ideas or hallucinations are present, the irresponsibility is total.

When the patient reaches the stage of dementia, even in the absence of delusions, he can not be held responsible for any of his acts.

Sweat Secretion in High Altitudes.—H. Sewall, in *Colorado Medicine*, states that the technical difficulties in the way of determining the relation of altitude to secretion of perspiration are very great. It is commonly stated by those who guess at facts that the circulation in the skin and the activity of the sweat glands increase with the elevation above sea level. Mosso found, on the contrary, that a resting man loses weight more slowly from the skin on the mountains than at sea level. Zuntz found that exercise at a moderately high elevation—1,740 feet—produced more abundant sweating than in Berlin.

REMARKS ON THE FEEDING OF THE HEALTHY INFANT.

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During the last decade the problem of infant feeding has been a peculiarly interesting one in this country. While European writers are fairly well agreed on fundamental methods, there has grown up a system of infant feeding in this country that in its elaboration is unique. This so-called percentage, or American, system has received such universal and unqualified approval among our pediatricians that it seems almost like heresy to doubt its tenets, and yet an overwhelming mass of evidence has appeared in the last few years that to my mind discredits the fundamental principles of that system.

I shall first outline what I believe to be a rational dietary for the first year of life and will then advance briefly some objections to the percentage method. It is important at the start to define the term "healthy" baby, because there is an essential difference between a healthy and a sick baby in its reaction to food. This difference centers in one fact—a normal, healthy infant has a broad tolerance for widely different food mixtures and for varying amounts and strengths of the different food elements, fats, proteids and carbohydrates. On the other hand, a baby that is congenitally below par, or that has been damaged by unwise feeding, or that has a temporary nutritional or digestive disturbance due to some intercurrent infection such as pneumonia, has a narrow range of tolerance for food. The sick baby requires careful dosage of food both as to quantity and composition. The moment a healthy baby is upset it is no longer a healthy baby but a sick one and must be treated as such. A food of a certain quantity and composition that yesterday was adapted to a healthy infant to-day may act as so much poison to the same baby that in the meantime has had an acute digestive or nutritional or constitutional disturbance.

THE QUESTION OF ARTIFICIAL FEEDING.

The most serious question that confronts the physician in the feeding of healthy infants is what to feed a new-born baby that is unable to get mother's milk. Budin, who was second to none in the value of his experience in infant feeding, says: "We, ourselves, and we say it in all sincerity, can not as yet indicate from our personal experience what is the best method of procedure in artificial feeding from the start." In practice he answered the question by making sure that nearly every baby in his care had mother's milk for a time. The value of the latter, even if used only for a short time, can hardly be overestimated.

Practically, it will be found that the great majority of new-born babies will bear well after the second day of life—and no baby should be fed artificially before that time—a dilution of one part of milk with two parts of water, with the addition of a small amount of milk sugar, say one-quarter to one-half an ounce in the twenty-four hours' food. This dilution can be strengthened gradually till the baby takes equal parts of milk and water with one-half to one ounce of milk sugar daily during the second and third months. The proportion of milk is gradually increased, that of water and sugar diminished till toward the end of the first year the child is on whole milk. The total twenty-four hours' food should

rarely exceed one quart. After the fifth or sixth month the ability to digest starch is so well established that the diluent of water is replaced by one of the cereal waters, or gruels. In the latter months of the first year additional food is given in the form of broths, strained vegetable soups, beef juice, fruit juice, zwieback, cracker, cereals, etc.

FREQUENCY OF FEEDING.

At no time during infancy is it desirable to feed the baby more often than five or six times in the twenty-four hours, and toward the end of the first year the number should not exceed four. This gives approximately a four-hour interval between feedings, and I believe that this interval, in the great majority of cases, should obtain from the start. It is a well-established fact that the stomach of a baby fed on cow's milk is not emptied till at least three hours after feeding. To feed a child oftener than, say, every three hours necessarily favors retention and the formation of fatty acids and is the cause of much of the indigestion that goes with early artificial feeding. Observation on any normal infant for the first few months of life that is digesting its food well will demonstrate the fact that naturally it will go as long as from three to five hours between feedings. It is a common experience that a baby fed at the breast every two hours will nurse well only every second time, while it can hardly be roused from its sleep the other time. The custom of feeding a bottle baby every two hours, that is still the rule for the first few months, has certainly no foundation in theory, and it can be demonstrated practically in nearly every baby that it is unwise to refill a stomach at the end of two hours when it is only partly empty. It is my experience that babies fed every four hours cry less than those that are fed every two or three hours, for the simple reason that babies cry far more from digestive and nutritional disturbances than from hunger.

THE QUANTITY OF FOOD.

The question of how to feed a baby is only partly solved when we have decided what it shall get and how often; there still remains the great factor of how much the child shall get. Our text-books, unfortunately, give us but little help in this, because they lay every stress on the strength or percentage and not on the total amount of food. A number of continental writers, notably Biedert, Heubner and Budin, have emphasized the great danger of overfeeding and each has attempted to show how to avoid it. It remained, however, for Czerny and Keller to show us just what happens when a healthy baby gets too much milk, and why it happens. This clinical picture of milk overfeeding is not an occasional occurrence—it is the rule. Nearly every baby that is fed milk without some check on the amount given during the twenty-four hours shows it in greater or less degree.

RESULTS OF OVERFEEDING.

When a healthy infant gets more milk than it ought to have it commonly gains for a time at an abnormal rate, say, from eight to twelve ounces a week. This gain in weight is quite regularly followed by a stationary weight unless the amount of food is reduced or changed in a certain way. If the amount of the same food is still further increased there may be another gain, but the child will finally begin to lose. If unchecked the ultimate outcome of this overfeeding is marasmus. This paradoxical loss in weight with an increase in food is accompanied by other signs of a fundamental nutri-

tional disturbance. The child becomes restless, its sleep is broken and it cries a great deal. It becomes pale, flabby and inactive, often rachitic. It has a marked tendency to itching eruptions that vary from the small, rough reddish spots on each cheek to the most extensive universal infantile eczema. It very commonly becomes peculiarly indifferent to its bottle, requiring much coaxing to take it, or in severe cases finally taking only an ounce or two at a time.

This condition of milk overfeeding is always accompanied by a characteristic appearance of the bowel movements which in itself shows that the child has had too much milk. The stools lose their normal yellow color, become pale yellow, or in severe cases have the color and consistency of putty. They are no longer normally moist and soft, but become hard and brittle, so that they will roll from the diaper without leaving it soiled. This condition naturally produces very marked constipation.

TOO MUCH FAT.

Whenever such bowel movements appear it means that the child has had too much milk, or, more properly, too much milk fat, because it has been shown that these bowel movements are composed largely of insoluble fatty acid salts. The resulting acidosis Czerny and Keller consider the cause of the nutritional disturbance that has just been outlined. That the fat alone is the cause of this condition is further shown by the fact that increasing the milk, or the fat alone by adding cream, will heighten the whole clinical picture, while diminishing the fat or eliminating it will produce a return to normal. The proteids and sugar have no part in this clinical picture. This is clearly shown by the fact that these cases improve most rapidly on malt soup, or skim milk, or buttermilk mixtures in which the fat is the lowest, while the proteid and sugar are the highest ever used in infant feeding.

At any time in this chronic process of milk overfeeding the whole clinical picture may suddenly change to one of an acute catastrophe. In many infants these sudden upheavals occur regularly whenever milk is added up to a certain amount. This upsetting, that is so frequent an occurrence in artificial feeding, is manifested clinically by vomiting, indigestion, diarrhea, loss in weight, fever, inability to stand food, especially milk, stupor or restlessness. If the disturbance is severe there are all the evidences of intoxication, including leucocytosis, albuminuria, glycosuria, dyspnea, collapse and especially psychic depression. This condition may vary from a mild indigestion to an intoxication so intense that it is rapidly fatal. The more serious cases occur more commonly during hot weather because the child is already debilitated by the heat, but more especially because it is relatively more overfed because it needs so much less food to maintain its heat and energy.

A METABOLIC DISTURBANCE.

This acute calamity has commonly received the name of gastrointestinal disturbance, summer complaint, summer diarrhea, enterocataarrh, gastroenteritis, gastroenteric intoxication, cholera infantum, etc., and has always been assumed to be due to an intercurrent infection along the gastrointestinal tract. In a series of classical papers appearing in the *Jahrbuch für Kinderheilkunde* during the past six months Finkelstein of Berlin has demonstrated very convincingly that the intoxications that occur in these cases are not due to an infection but to a metabolic intoxication more akin to

uremia or diabetic coma, caused by the ingestion of more food than the baby can assimilate. That this theory is a correct one is evidenced by the fact that any degree of indigestion and intoxication can be produced at will in these cases by increasing the food to a sufficient degree, and a return to normal will follow just as certainly when all food is withdrawn for twenty-four or forty-eight hours. Finkelstein has increased the food in several cases without a qualm of conscience, because he knew that a day or two of water diet would restore the child to its former condition.

It seems to me that in this idea of a metabolic disturbance rather than in a simple infective process we have the only satisfactory explanation for the greater prevalence during the summer months of these digestive and nutritional disturbances that are accompanied by intoxication and have in this a most valuable indication that any infant food must be materially lessened during the hot weather.

This metabolic intoxication follows most naturally and most frequently in the cases of milk overfeeding. Theoretically, then, one would expect the fat to play the chief rôle here as there. These patients, we know from every-day experience, can not take cream nor even whole milk in small quantities for some time, and yet will take skimmed milk almost from the start. A child that is well convalescent can be given a relapse to its former condition by the addition of only a small amount of fat. Finkelstein has shown conclusively that sugar when given in excess, as in buttermilk and malt soup preparations, can produce the same intoxications and, even in small amount, the same relapse, while proteid, whether albumin or casein, can produce neither.

I have dwelt rather at length on these results of overfeeding, because the artificial feeding of healthy infants is a negative as well as a positive procedure. We must see not only that the baby gets enough of each of the food elements, but also that no harm comes to it from unwise feeding. If overfeeding is as important a factor in the causation of digestive and nutritional disturbances as I have indicated, then the prophylaxis of overfeeding is of the greatest importance in the feeding of a healthy baby.

In those babies that one has under satisfactory observation it is a simple enough matter to tell when they are thriving as they should, and almost equally simple to tell when disturbances are arising that are due to overfeeding. A healthy child is a "good baby" unless it is spoiled; it sleeps well, it is contented and active, has a good pink color, its tissues are firm, its bowel movements are yellow, moist, not excessively offensive and well digested; its temperature is remarkably uniform at all times; its gain in weight conforms to what we recognize as a norm, a steady gain of about four ounces a week throughout the year, a little more during the first few months, a little less during the last few months. If too little food is given the gain is insufficient, if it is increased to the proper amount the gain becomes normal. Milk overfeeding is easily recognized by the symptom-complex outlined above.

THE EVIDENCES OF INTOXICATION.

The acute catastrophes or intoxications likewise give their warnings. The prodromata that are always present may be of very short duration, or they may extend over weeks and months and should always be heeded. There is evidence of indigestion shown by the general condition of discomfort and by the character of the bowel

movements; the weight curve shows wide variations with a general tendency to remain about level or to go down. Still more important, there is an abnormally variable temperature curve with occasional spurts of fever and an increasingly narrow tolerance for certain food elements, notably the fat and the sugar. If these warnings are heeded and all food is withheld for twenty-four or forty-eight hours while the child is on a water or tea or cereal water diet with saccharin (gr. i to the quart) to sweeten its food the danger is avoided. If unheeded, and especially if the food is increased because the child is losing, the intoxication is almost inevitable.

Fortunately we have certain numerical standards as to the amount of food that the normal infant should get. These figures are the result of observations on large numbers of thriving breast-fed and bottle-fed babies. These standards are of immense practical value in every case, but especially in those cases in which one can not see the patient constantly, not so much to tell us how much to give a baby as how much not to give. They should be considered, therefore, rather as a check on overfeeding and underfeeding than as a guide.

BODYWEIGHT VERSUS AGE.

If simple milk dilutions with the addition of carbohydrates are used the simplest and most natural standard would be one that would tell us about how much milk per pound or kilogram a baby should get. That it is more important, as a general proposition, to vary the amount of milk according to weight rather than according to age is, I think, a self-evident fact. Budin gave us a valuable rule of this kind. He prescribed for every baby after the fifth or sixth month and weighing from thirteen to fifteen pounds one-tenth of its body weight of undiluted milk. This would be the equivalent of about one and one-half ounces to the pound. This standard, if a proper one when straight whole milk is used, is manifestly too high when milk dilutions with the addition of sugar or gruels are given, because here a considerable quantity of food is given outside of the milk itself in the form of sugar or starch.

In such dilutions as I have indicated it has been found that one ounce of milk to the pound of body-weight is about a minimum on which a healthy baby will thrive as it should; that an ounce and a quarter is the more usual amount, and that we commonly have distinct evidence of overfeeding when we approach one and one-half ounces to the pound. A healthy baby of twelve pounds, therefore, would have at least twelve ounces of whole milk in its twenty-four hour food, more commonly fifteen ounces, and rarely if ever as much as eighteen ounces. It must be distinctly understood that this is not a definite rule applicable to every healthy baby. The important point is that it has been found empirically that the milk requirement of the great majority of healthy babies who are thriving on milk dilutions such as the above lies between one and one and a half ounces to the pound of body-weight. To my mind this simple guide is one of the most useful in infant feeding. It is, of course, of no value in feeding a sick baby, because here the limit of food tolerance is very quickly reached and we can give only as much as the baby can digest and assimilate in its present condition.

THE ENERGY QUOTIENT.

A still more useful standard, because it can be applied to all kinds of food combinations, is the calorimetric

standard, according to which the food requirements are expressed in calories per pound, or per kilogram of body-weight of baby. To Heubner belongs the credit of having accurately determined the number of calories per kilogram of body-weight used daily by the healthy, thriving infant. This so-called "energy quotient" he placed at a maximum of one hundred for the first six months, the amount gradually lessening after that to about eighty or eighty-five at the end of the first year. He considered seventy as the approximate energy quotient on which weight equilibrium would be maintained. For several years I have determined the energy quotient in every feeding I have given and I am still daily impressed with the practical value and accuracy of the figures laid down by Heubner.

Only very exceptionally, if ever, is it necessary in healthy babies to exceed these figures. It must be emphasized that one should never determine in advance how many calories to feed a baby of a certain age and weight, but that we feed a baby a food of proper composition, and at proper intervals for that baby, and keep tab on its energy quotient to prevent overfeeding and underfeeding and to give one that sense of security that comes from knowing that the baby is getting about the amount of food it ought to have. Often a very satisfactory gain is made on energy quotients much lower than those determined by Heubner; the amount on which that child is thriving should not be increased no matter how low the energy quotient.

It is not at all uncommon, on the other hand, to find a baby fed on whey, or skimmed milk, or barley water, or condensed milk mixtures, for a long time, with an energy quotient of only thirty or forty, while the baby needs at least seventy to hold its weight. It is impossible to tell in such cases how much food a child is really getting as compared with what it ought to get unless one uses this calorimetric standard.

The process of determining the energy quotient in any given case is a very simple one. It is necessary to remember only a few figures that represent the caloric value of one ounce of each different food used in infant feeding. Thus cream (16 per cent.) has a caloric value of about fifty-four to the ounce; milk, twenty-one; fat-free milk, ten; sugar, one hundred and twenty; flour or cereal, one hundred; cereal water, two or three, etc. To calculate the energy quotient it is only necessary to multiply the number of ounces of each ingredient of the food mixture by its caloric value, to add the products and to divide the sum by the number of kilograms the baby weighs. If we divide the total number of calories by the number of pounds it will be necessary to multiply this by 2.2 to get the number of calories per kilogram. After a little practice the energy quotient of a somewhat complex food can be calculated in a few seconds even without the use of paper and pencil.

THE PERCENTAGE METHOD.

Nearly all that has been said has been so at variance with what is taught in our text-books, and what is commonly practiced in this country, that the subject can hardly be dismissed without some reference to the percentage method. The percentage method is practically based on the idea that the proteid of cow's milk is the one food element that is difficult to digest, and, on the other hand, that the fat is comparatively harmless and easy to digest. It further assumes that in feeding a baby the important thing in modifying the food is to give the baby a certain percentage of each food element

rather than to give it a certain amount of food. As a logical sequence to this certain tables are set forth that indicate what strength of food a healthy baby should have at different months, the percentages gradually increasing as the infant grows older.

That the proteid of cow's milk is difficult to digest by infants it seems to me has no longer any positive evidence to support it and is discredited by nearly all Continental writers. For a number of years some of us have looked in vain for any clinical picture that we could designate as proteid indigestion. There is a purely theoretical consideration that casein must be hard to digest, because relatively so abundant in cow's milk, because it curdles in large firm masses instead of the finer ones of mother's milk, and because curds that are assumed to be casein are found in the bowel movements as evidence of indigestion. This theoretical consideration has no standing when it can be demonstrated practically that nearly any baby can digest a high percentage of pure casein in suspension, or skimmed milk, provided it can stand that much sugar, and that curds never appear in the stools no matter how great the percentage of proteid, provided the food is fat free, and lastly that curds regularly appear in the stools of babies to whose food whole milk is added even in small quantities after they have been on a fat-free milk. The very curds that have been assumed to be casein, we are now told on the highest authority, are chiefly fat derivatives.

On account of the complexity of proteid metabolism it would seem, theoretically, that an excessive amount of proteid would make a greater demand on both the digestive and metabolic powers of the child than the other food elements. To what extent this is true can not be told at the present time. There is very little if any evidence at the present time that there is any harm in feeding a large amount of proteid, although the fact that Nature provides for so little in mother's milk would make us hesitate to use an excessive amount. It is certainly an interesting fact in this connection that in the cases of severe intoxication, where digestion is nil, and where there is a state of "metabolic bankruptcy" (Finkelstein), proteid alone can be fed, in what would usually be considered excessive amounts even in health, without any detrimental effect, while the administration of small amounts of fat or sugar would surely produce serious results. In two cases of summer diarrhea with profound intoxication, and the patients seemingly moribund, each was given, after one day of water diet during the next twenty-four hours, the pure washed casein in suspension of sixteen ounces of milk. This was followed by an uninterrupted convalescence and curdless bowel movements. Formerly I would not have dared give them even one ounce of milk for a number of days on account of the fear of "proteid indigestion," and I feel positive that both babies would have died if they had been put on barley water with sugar, or on whey, or on milk containing fat.

That fat is relatively easy to digest and metabolize seems equally doubtful. It is certainly the one cause of milk overfeeding and plays the leading rôle in the intoxications, and these two conditions are much the most frequent and serious nutritional disturbances in infancy. We all know from every-day experience that cream is not well borne by sick babies, especially those that have a digestive disturbance, nor is whole milk so well taken as skimmed milk, and if this is true, then there is every reason to believe that the fat is compara-

tively difficult to digest in health as well. All through our literature we see more and more evidence of the fact that fat is no longer considered so easily digested and assimilated as was formerly thought. The following case is instructive in this connection:

AN ILLUSTRATIVE CASE.

History.—Baby B., aged nine months; weight, eighteen pounds; healthy and thriving on equal parts of milk and barley, water and sugar. The proteid was increased to 4 per cent. within four days; the fat remaining the same (2 per cent.) and the caloric value approximately the same (energy quotient=90). No deviation from the normal gain, digestion and well-being during the following week. During the following ten days the fat was increased to 4 per cent., the proteid lowered to 2 per cent. and the same caloric value maintained. Within a few days practically every symptom of overfeeding was produced, including a universal eczema—which the mother interpreted as measles—anorrexia, restlessness, pallor, loss of twelve ounces in two weeks, hard gray bowel movements, and finally the fever, frequently cheesy bowel movements, etc., of a beginning intoxication. The fat was then at once lowered to 2 per cent., the proteid increased to 4 per cent., the caloric value remaining the same. Within a few days the child was normal again in every way. Such an experiment is justifiable only because we have a positive assurance that a rational therapy based on our knowledge of the pathogenesis of overfeeding will quickly restore the child to its former condition unharmed.

The assumption that the percentage of different food elements is of prime significance is equally untenable. If the child can only retain and digest it, it makes little difference what the strength of the food is, but it does make all the difference between failure and success whether the child gets a proper or an excessive amount of food. One can as easily overfeed a baby on a large amount of a low percentage of everything as on a much smaller amount of a stronger food. In other words, the percentage of food elements *per se* has no bearing on overfeeding or underfeeding. With the high percentages of fat commonly advocated by those who use the percentage method we have, furthermore, the use of a maximum amount of the one food element that is the important factor in producing the nutritional disturbances that result from overfeeding, i. e., the fat.

Moreover, a study of the tables given in our leading text-books will show that from a calorimetric standpoint they uniformly recommend or permit excessive amounts, especially during the latter part of the first year. For a baby of six months weighing, say, fifteen or sixteen pounds, Holt's table permits an energy quotient varying from 95 to 150, while a proper amount would be 80 to 90 or 95.

It is interesting in this connection, too, to bear in mind the simple fact that mother's milk varies but little in composition or percentage after the first few weeks, but that its amount varies directly in proportion to the needs of the nursling.

It is claimed for the percentage method that it is unique in its flexibility, permitting us to increase or diminish individual food elements at will. With the proteid as a practically negligible quantity in therapeutic amounts it is evident that the other food elements, the fat and the carbohydrates, can be varied just as freely in the use of simple milk dilutions.

Finally, it must be admitted that the percentage system has always seemed a peculiarly complicated one to the great majority of physicians and that most of them ultimately did not use it as taught by those most conversant with it. If not used as intended it permits of a

wide range of error. Frequently cream is added in excessive amounts without calculation of either the amount or the percentage and the inevitable bad results follow. It is little wonder, then, that a majority of physicians finally use the simple modifications recommended by the "baby food" men, and this alone is a serious arraignment of that system.

In conclusion, I wish to express my indebtedness to Dr. F. X. Walls for his very kind assistance in many ways.

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CLINICAL OBSERVATIONS ON ANTIGONOCOCCIC SERUM.

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In October, 1907, a quantity of antigenococcic serum was placed in our hands by Parke, Davis & Co. for experimental use in the treatment of gonorrhea and its complications. This serum is prepared according to the directions of Dr. Torrey and consists of serum obtained from the sheep, immunized against several strains or varieties of gonococci. For an account of the experimental work and the technic employed in the manufacture of the serum we refer the reader to articles by Drs. Torrey and Rogers¹ and a further communication by Dr. Rogers and Dr. Torrey.²

The serum is supplied in sealed bulbs of 2 c.c. capacity, and this quantity is recommended as a dose, to be injected hypodermically into the loose cellular tissue of the back, buttock or arm. In our experiments we have never used, except in one case, a larger single dose than 2 c.c., the intervals between injections varying from one to three days. The injections were given deeply into the buttock, as a rule, but in a few cases the interscapular region or the loose tissue on the back of the arm was selected. Our experiments were carried out on a series of twenty-three cases, twelve of which were confined to the hospital and therefore under better supervision than the remaining number which, with one exception, were ambulant cases. The following is a brief report of the history and course of each case:

CASE 1.—The patient, C. I., had gonorrhea two years ago, with recurrences at intervals and acute exacerbation two weeks before admission. There was a mucopurulent discharge in which gonococci were found. The first glass was cloudy, second glass clear. The prostate was enlarged, soft and tender, but not nodular. Gonococci were found in the expressed secretion after irrigation of the anterior urethra. The first injection was made Oct. 16, 1907, consisting of 2 c.c. of serum into the buttock. The injection was repeated in four days and all other treatment discontinued except massage of the prostate. The third and last injection was given three days later. There was less discharge, but gonococci were still present in the expressed secretion of the prostate. On Oct. 24, 1907, the patient refused to remain for further treatment. There was less discharge, but otherwise the condition was the same as on admission.

1. THE JOURNAL A. M. A., Jan. 27, 1906, xlii, 261, 263.

2. THE JOURNAL A. M. A., Sept. 14, 1907, xlix, 918.