Specific infection could not be accounted for in the case of appendicitis which went to autopsy from perforation of the appendix and peritonitis. The patient was a young man, married, with two healthy children. Eighteen cases of appendicitis and sepsis were examined in all, and only the one mentioned above gave a positive serum reaction.

The two cases of typhoid fever went to autopsy the same day and showed extensive lesions of typhoid and septic infection. Syphilitic infection could be practically excluded. Typhoid cases examined in the wards for control gave negative serum reactions.

The present work shows, as has already been noted by Weil and Braun,⁸ that a positive Wassermann reaction may be given not only in syphilis but also in other conditions, such as typhoid fever, carcinoma and septic infections. In these cases in which a positive serum reaction was obtained, as these authors have described, and in my own cases, the pathologic processes, such as multiple metastases in carcinoma, and the last stages of sepsis in typhoid and appendicitis, were very far advanced.

Moreover, in these cases with no suspicion of syphilitic infection a positive reaction was given not only by the physiologic salt solution but also by the alcoholic extracts.

CONCLUSIONS.

1. Alcoholic extracts may be safely used in the reaction for the serum diagnosis of syphilis, because they in no way differ from watery extracts.

2. There are some non-syphilitic blood sera which give a positive Wassermann reaction. These sera, however, are so rarely met, and then only in such extensive pathologic processes, that they do not vitiate the clinical value of the reaction.

I extend my hearty thanks to Dr. Paul Fleischmann, clinical assistant in the First Medical Clinic of the University of Berlin, Geheimrat His, director, for the assistance and direction of this work.

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THE QUARANTINE OF SMALLPOX.*

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While all intelligent and unprejudiced thinkers who have had any experience in dealing with smallpox recognize the protective value of vaccination, the general tendency is to insist on quarantine as an additional safeguard against this disease. It is for us to consider:

1. What does quarantine accomplish?
2. Is it necessary?

Quarantine is an evidence of ignorance. As soon as the true cause of any disease is recognized attention is directed to its prevention in the first instance rather than to its suppression after the disease has appeared. For example, with tuberculosis we direct our attention to destroying the infectious agent rather than to quarantining the patient. Again, before the means of transmission of yellow fever was known the quarantine methods used in the attempt to control its spread were most rigid, but when the world came to know that only a

mosquito could transfer yellow fever from an infected to a healthy person, quarantine was practically abandoned and attention directed to keeping mosquitoes away from the patients, to keeping them away from healthy individuals, and to the destruction of the mosquitoes capable of carrying the infection.

Consistency would suggest that we follow a similar course with all preventable diseases when we have learned how to control them. So far smallpox has been an exception to this rule. We have known for more than a hundred years how to prevent this disease, and yet quarantine of all those exposed to or associated with a smallpox patient, as well as the patient, is still the general custom. Public sentiment demands this, and too often the medical profession supports the public in this unjust demand.

To control any disease by means of quarantine we must restrain all infectious individuals during their entire period of infection. With smallpox this may be possible if the disease appears at the outset in virulent form and if municipalities are willing to bear the necessary expense of restraining all such individuals. But if the virulent form of the disease becomes epidemic, or if the disease prevails in mild type from the outset, practically nothing is accomplished through quarantine, for there will always be mild unrecognized or concealed cases at large during part if not the entire time of their illness. Under such circumstances, while the quarantine is a failure, it entails great expense on the public and on individuals. It also favors a continuance rather than a control of the disease, for it is conveying to the public a sense of safety that does not exist and thus encourages delay in vaccination in countries where compulsory vaccination is not enforced.

There is no objection to the isolation of smallpox patients, for we do not want the disreputable-looking creatures about. Those who are not protected by vaccination deserve no sympathy if they have reached mature years, and they, too, should be isolated or kept under rigid observation after an exposure to smallpox until it can be determined whether or not they are to develop the disease. To restrain or quarantine the immune, however, is an injustice which should not be tolerated.

Any one who will study without prejudice the course of smallpox must admit the protective value of vaccination. Why, then, is not every one protected? First, because people will not adopt such protective measures unless compelled by law so to do. Compulsory vaccination laws properly enforced will eradicate smallpox from any country.

Vaccination has been brought into disrepute by poor vaccine, by careless methods in vaccinating, and by the exaggerations and misstatements of the so-called anti-vaccinationists. It must be admitted that in some instances sore arms and even death follow vaccination, but when this happens the vaccinator is at fault rather than the vaccine, assuming that the vaccine is of good quality, as it should be in this country at the present time under government inspection. The production of all vaccine should be under some responsible governmental control. The punishment can not be too severe for placing on the market a vaccine that is not safe.

The vaccine may be ever so satisfactory, but if the vaccinator is careless or the vaccinated is not properly cared for, infection at the point of vaccination may follow. Such conditions are far more apt to occur in a country without compulsory vaccination laws than

8. Wien. klin. Wchnschr., 1908, No. 26.

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-ninth Annual Session, held at Chicago, June, 1908.

in one where such laws exist. Under compulsory vaccination laws the exact amount of vaccine needed can be determined in advance. If it is known that 40,000 births occur annually in a state, then that state should have an annual market for at least 40,000 vaccination points or tubes. The producer, knowing this fact, can plan for producing this amount under the most favorable conditions. Without compulsory vaccination laws the vaccine producer has nothing to guide him in the amount of vaccine to be produced. He must, therefore, try to keep a safe quantity on hand. If a smallpox scare arises there is at once a call for a large amount of vaccine. The producers' supplies will be exhausted and they will hasten to replenish, although the conditions for so doing may be most unfavorable.

Careless methods of vaccinating should never be tolerated. They will exist, however, where there are no compulsory vaccination laws. A necessary accompaniment of compulsory vaccination is the public vaccinator, through whom the possibility of careless vaccination is reduced to a minimum.

Vaccination should be performed during infancy—by preference during the first six months of life. At this time the danger of infection at the point of vaccination is very slight indeed, for the child is living under ideal conditions. Still further, with compulsory vaccination laws the public vaccinator should choose his season for vaccinating. It is a well-recognized fact that vaccination should, if possible, be avoided during the hot summer months, both on account of the quality of the vaccine at that time and the condition of the individual to be vaccinated. In countries without compulsory vaccination laws vaccination is practiced only when the alarm signal is sounded. Children of school age are often vaccinated just before the opening of schools in the fall—the most undesirable season of the year from every point of view. The methods of vaccination in vogue in this country at the present time are such as to make us wonder that we do not have more infection following vaccination.

The antivaccinationists say that physicians are in favor of vaccination because of the fees they derive from it. This is absurd. A physician can not afford to vaccinate for the ordinary fee if he does it properly. He can make money on vaccinations only when he undertakes to vaccinate a great many people in a very short time—a kind of vaccination that should never be tolerated. Lady Mary Wortley Montague, in 1717, speaking of inoculation, said:

I should not fail to write to some of our doctors [in England] very particularly about it if I knew any one of them that I thought had virtue enough to destroy such a considerable branch of their revenue for the good of mankind. But that distemper [smallpox] is too beneficial to them not to expose to all their resentment the hardy wight that should undertake to put an end to it.

The antivaccinationists do not look on protection against smallpox (vaccination) as did Lady Mary Wortley Montague on inoculation. Lady Mary said that the doctors would not inoculate for fear of reducing their business; the antivaccinationists say that doctors vaccinate to make money.

Vaccination should be free. The public vaccinators should be trained in their special work and should be careful and conscientious. Individuals should have the privilege, however, of choosing their own physicians as vaccinators if they wish, but such a private physician

should vaccinate with as great care as he would do surgical work and should be paid a reasonable fee for his services.

Physicians have placed themselves under criticism by urging compulsory vaccination laws on legislators. The enemies of vaccination charge physicians with mercenary motives in giving such advice and the legislators too often listen to the ignorant ranters rather than to the scientifically trained physicians in such matters. Why should physicians place themselves in such an unenviable position? They should be satisfied with acting as educators, throwing the responsibility of legislation on the people themselves. As educators their influence should be against any attempt to control smallpox by means of quarantine.

In 1904, in the Conference of State and Provincial Boards of Health held in Washington, a committee was appointed to report on the advisability of the abandonment of isolation in the attempt to control smallpox. The argument of this committee was to be based on the following propositions:

WHEREAS, In many parts of this country (at the present time) a mild variety of smallpox is prevailing, and first cases are quite generally unrecognized, thus making their complete isolation impossible and tending to spread the disease among the unvaccinated, and

WHEREAS, The isolation of the many cases causes excessive expenditures in a fruitless attempt to restrict the spread of the disease, and

WHEREAS, Isolation of smallpox patients is practiced chiefly for the protection of those indifferent or opposed to the only scientific means of preventing the spread of this disease, viz., vaccination; therefore

Resolved, That a committee be appointed by this conference to consider this subject in all of its bearings, and report next year as to whether in states where the above described conditions exist the effort to control smallpox should not be confined chiefly to vaccination and revaccination, rather than to depend in part or in whole upon quarantine.

At the conference meeting of 1905 these propositions were thoroughly discussed, and while the majority of the state sanitary representatives were in sympathy with some radical action in favor of vaccination rather than quarantine as a means of controlling smallpox, no definite action was taken.

The Minnesota State Board of Health has taken a position favorable to vaccination and against any false teaching relative to the protective value of quarantine. It did this only after carefully considering the subject. It preceded the publication of its new regulations relating to smallpox by the publication of the following resolution:

It having been established that smallpox will not occur in a well vaccinated community, and that all attempts to restrain this disease in a community not protected by vaccination by means of quarantine, will fail; that quarantine in a well-vaccinated community is unnecessary; that attempts to control the spread of smallpox by means of quarantine are unscientific, irrational, expensive and misleading; that in laying down strict rules for the quarantine of smallpox sanitary authorities are favoring unscientific and illogical methods for its control and are conveying false ideas as to the safety of the public, the Minnesota State Board of Health advises that after January 1, 1908, further attempts to control smallpox by means of quarantine shall be abandoned. Meeting of the board, Oct. 9, 1906.

The reason for postponing action on this recommendation until Jan. 1, 1908, was that time might be given those who wished so to do to provide for their own and

others' protection through vaccination before adopting a change in regulations.

This action of the board greatly disturbed the anti-vaccinationists, who sent their agents through the state decrying the proposed action of the board months before the new regulations were made public. These regulations are as follows:

11. The local health officer having knowledge of, or having reason to suspect, the existence of smallpox, shall investigate, and at once place on the house where smallpox exists a sign setting forth the facts. This sign is to serve only as a warning to those who may wish to avoid the house, and not as an indication of quarantine. When the attending physician considers a smallpox patient as having recovered (no longer a source of danger) he shall report the fact in writing to the local health officer, who shall thereupon remove the warning card from the house. *The patient must not leave the house until after the removal of the warning card.*

12. The apartments occupied by a smallpox patient shall be deemed infected, and when vacated by death, removal or recovery of the patient shall, together with their contents, be thoroughly disinfected under the supervision of the local health officer.

13. Every physician shall immediately report to the local health officer, in writing, the name of every smallpox patient under his care, the state of his or her disease, and his or her place of residence. A report must be made for each case as it occurs in a family or household.

14. Every physician shall report in writing to the local health officer the death of any smallpox patient under his care within twelve hours thereafter.

15. The local health officer of any city, village or township must report within twenty-four hours to the secretary of the Minnesota State Board of Health all cases of smallpox occurring within his jurisdiction and the date of removal of the warning card.

When these resolutions were passed it was supposed that an old law was still in force which provided for the exclusion from school of unvaccinated children when smallpox prevailed in a community. It was thought that this would protect the young. It was found, however, that this law had been displaced by later legislation. The State Board of Health, at its regular meeting in April, 1908, passed the following regulations for the benefit of the unvaccinated:

17. Following an exposure to smallpox, every individual who can not show evidence of a recent successful vaccination or a recent attack of smallpox must be vaccinated within three days of the first exposure or placed under the same isolation restrictions as smallpox patients.

If smallpox prevails in a community, or if the disease appears in a school, all unvaccinated teachers and pupils must be excluded from school for a period of three weeks unless vaccinated within three days of first exposure. Failing to comply with this requirement, the school must be closed for a period of three weeks.

If smallpox appears in any class in any college in Minnesota, all unvaccinated teachers and students in the class must be excluded from recitations for a period of three weeks unless vaccinated within three days of first exposure. Failing to comply with this requirement, the classes attended by such teachers or students must be discontinued for a period of three weeks.

The board expected criticism from the laity for making such a radical change in its smallpox regulations, but it expected the support of the medical profession on apparently such a logical procedure. Strange to say, there were not only prominent physicians, but certain sanitarians, who criticised the board's action. The board still thinks it was right and trusts that other state boards will follow its example.

ABSTRACT OF DISCUSSION.

DR. GEORGE W. WEBSTER, Chicago: If a smallpox patient is isolated, but the nurse and family come in contact with the patient, and are allowed to come and go as they please, are they not as great a menace to the public as the patient, after he has partly convalesced?

DR. G. B. LAKE, Wolcottville, Ind.: I am a member from a country district where this smallpox matter has been agitated. We have had several smallpox epidemics, and this question has been largely talked over among us. In towns where the quarantine has been enforced very strictly it has been a decided burden, because when a family, no matter in how good circumstances it may be, is quarantined for smallpox, and the breadwinner compelled to refrain from his necessary labor, the general understanding is that that family must be supported, not simply with the necessities of life, but also with any luxuries to which its members may feel themselves entitled. A person of mature years who refuses to be vaccinated absolutely deserves no sympathy, and I believe that the cutting off of the quarantine laws with regard to smallpox will be the quickest and surest way of educating the people in the necessity of vaccination.

DR. J. N. HURTY, Indianapolis: I endorse every word Dr. Bracken has said. There is not the slightest need of having smallpox. It is an indictment of the intelligence of a community for it to have the disease. There is only one prophylaxis for smallpox. Quarantine does not amount to a hill of beans. If a single patient comes into a community where smallpox has not been prevailing, isolation of that patient will probably stop the spread of the disease. If the disease gets started, as it did in Indiana, quarantine amounts to nothing. I am only sorry that we have a statute, which the board of health can not change, which requires that smallpox be quarantined. That is a useless expense. Down in our mining regions they love to be quarantined. If told that vaccination will protect them, the people will reply that they would rather have the disease than be vaccinated. The reason is that they will have a chance to lie around at home with support furnished for a while. They will run the risk of death, for they see that smallpox causes very few deaths. They care little for the inconvenience. It is in vain to tell them that we, being vaccinated, are not afraid of it, can not be attacked by it, can live with it—eat it, if we want to, or do as Dr. Brayton did, who inoculated himself with it over and over again, and carried the sore on his arm three months by inoculation to demonstrate that he could not have it. All this has no effect. What is the use of quarantine to control epidemic smallpox? Let those that want it have it. I regret that the Indiana statute which compels us to quarantine smallpox is repealable only by legislative act. On the Monon road to Indianapolis, in Carroll County, are about two hundred cases along Wild Cat Creek, some very severe. We just let them alone. They will never have it again. The health officer of Sullivan County took his thoroughly vaccinated child with him when he went to see cases, to demonstrate to the people of Sullivan County how to go free from smallpox. Of course, neither father nor son contracted the disease because they were successfully vaccinated. Even such demonstrations do little good. I endorse Dr. Bracken's contentions.

DR. HEMAN SPALDING, Chicago: It is immoral to advise that every one be allowed to get smallpox who wants it. One might as well let a man commit suicide because he wants to do so. Quarantine, of course, is secondary. Vaccination is an absolute preventive; if everybody can be induced to believe that and act on it there will be no more smallpox. In Oska-loosa, Iowa, I made such a statement before the city council. A member of the council said: "Let's go right out and get them all vaccinated." I said he might start out and try it; it would take one thousand to vaccinate another thousand. It is necessary to quarantine and isolate. Right out of Dr. Bracken's and Dr. Hurty's back doors smallpox patients are coming to Chicago all the time. It cost us \$100 to take care of patients that Dr. Bracken has failed to quarantine in Minnesota, and the same is true of Dr. Hurty's state. We have four cases of smallpox in Chicago now, one from Montana, an-

other from Tennessee, all four from outside of the city. Nearly all our cases are imported. We have this city so well vaccinated that smallpox patients can enter a car or hotel or any place here, and out of 500 people they meet, only one or two will be infected. Vaccination stands first, quarantine second. Quarantine can not be dropped under the present condition of affairs. I do not approve the method of Minnesota. It has made me turn gray this winter. We have had more trouble with that state than any other. Dakota is doing the same thing, and we have three or four cases from there. I am absolutely opposed to Dr. Bracken's paper as it stands.

DR. C. F. WILLIAMS, Columbia S. C.: I think that Dr. Bracken is on the right line. I do not think, however, that exposed individuals should be allowed to run at large unless vaccinated. I agree with him that the shotgun quarantine does harm instead of good, for when such a measure is instituted cases are going to be concealed which otherwise would be reported. When the bread-earner is shut up it becomes necessary to feed his family, and in a very widespread epidemic it is not long until the city or county treasury is so depleted that a howl goes up from this quarter, resulting, as a rule, in antagonism against those trying to control the disease. In South Carolina we have a compulsory vaccination law. As soon as one develops the disease, patient and attendant are isolated, and all the occupants of the house and those exposed vaccinated. The occupants are then allowed to go in and out just as though nothing had happened. The public is warned by a sign, bearing the words, "Contagious Disease Here," which is placed by the entrance to the house. When the case is dismissed by the attending physician the house is thoroughly disinfected. By this means we have been able to control the disease, and in very few instances has a second case occurred.

DR. H. M. BRACKEN, Minneapolis: In answer to Dr. Webster's question, we allow the vaccinated to go to and from placarded houses. That is exactly in line with the teaching of Dr. Chapin's paper this morning, and with the position taken by Dr. White yesterday. Dr. Gorgas says that the sick man is the great transmitter of disease. It is not the healthy individual who spreads smallpox; it is the sick, and we want to impress this fact, not only on the laity but also on members of the medical profession. I admit that there is a possibility of transmission by a second to a third party, but that possibility is so slight that we can ignore it, and not do any great harm in the community. We certainly can do more good by advising people that they must protect themselves by vaccination than by giving them the idea that we are going to protect them by quarantine. Dr. Spaulding says that smallpox is coming into this city from Minnesota. If that is so the Chicago Department of Health is not doing its duty. Dr. Evans was in Minnesota a short time ago, and took the position that if Minnesota wanted to have smallpox it ought to have the privilege, but that it was a question if outsiders should not quarantine against the state. I wrote to Dr. Evans, at that time, urging him to advise me of every case of smallpox found in Chicago from Minnesota. At that time he advised me of one case. We sent an inspector at once to the place in Minnesota from which this patient went and found smallpox patients not properly looked after. These patients were at once placed under proper control. We have not had notice of a single case of smallpox in Chicago from Minnesota since that time.

Pasteur Institutes in India.—The Pasteur institute for the treatment of hydrophobia is now in full swing at Kasunli, a small hill station in the Punjab, on the road to Simla. Large numbers of Europeans come here from near and far for treatment, and soldiers are sent by the government free of charge from all parts of the empire. In some instances natives will travel immense distances in order to place themselves under treatment, although in most cases they can not be prevailed on to recognize the facts of the situation. Hydrophobia is terribly prevalent in India among dogs and jackals, but there is no particular reason why it should not be as amenable to preventive measures in India as it has proved to be in the British Isles.—*Medical Press and Circular*.

Clinical Notes

THE TREATMENT OF PERNICIOUS ANEMIA WITH CHOLESTERIN.

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In a recent communication Reicher¹ reports three cases of pernicious anemia and one of secondary anemia referable to nephritis in which cholesterin was used for therapeutic purposes, the idea in mind being to counteract any hemolysins that might be active, in a manner analogous to the action of cholesterin on cobralecithid. Similar considerations led me to the same attempt over a year ago. But as I have had only six cases of pernicious anemia at my disposal during that time, I hardly thought my data sufficient to warrant their publication. Reicher's paper, however, makes it desirable to place on record the little that has been done.

All six were typical cases of cryptogenetic pernicious anemia, one of them being of the so-called aplastic type. Three patients were in an advanced state of the disease when coming under observation and only lived for a few weeks; in these no effect whatever was observed from the use of the cholesterin. A fourth patient was discharged unimproved after a three weeks' course of the treatment and died a few days later. In the fifth only 24 gm. had been administered when the treatment was suspended, and death occurred shortly thereafter.

An apparently beneficial effect was obtained in the remaining case, but as the patient at the time when the cholesterin treatment was begun was virtually in her first attack one naturally hesitates to ascribe the noted improvement to any one therapeutic factor. It is noteworthy, however, that the resumption of the cholesterin some months later, when a relapse had occurred, was again followed by marked improvement. This patient is still living and in good condition. When first seen the red cells numbered 1,744,000, while the hemoglobin was 46 per cent.; there was then marked anisocytosis with a distinct tendency to macrocytosis; there was poikilocytosis and extensive granular degeneration (so-called). Normoblasts with pyknotic and karyolytic nuclei were fairly numerous; there were some free nuclei and a few mitotic cells; megaloblasts were scant. After a three weeks' course of cholesterin the red cells had increased to 4,000,000 and the hemoglobin to 80 per cent. Anisocytosis was still noticeable but less marked than before; granular degeneration was slight and there were no nucleated red cells. Subsequently the anemia became more marked again, but, as I said before, the patient again improved and at the present time is well.

In Reicher's three cases of pernicious anemia one patient remained unimproved, while in the other two the effect of the cholesterin was decidedly beneficial. One of these patients was admitted in a wretched condition, with intense dyspnea, ascites, pleural effusion, edema and a red count of 750,000 with 18 per cent. of hemoglobin. After a week the count had risen to 1,750,000 and the hemoglobin to 30 per cent., while the threatening symptoms had all disappeared. The improvement was thus quite remarkable, but after a few weeks no further gain was obtained and still later a relapse occurred which ended fatally.

1. Berl. klin. Wehnschr., 1908, Nos. 41 and 42.