In the year 1875, I published, in the *Dublin Monthly Journal of Medical Science*, a table of 310 cases of fever; of these, 220 got no stimulants, 58 had claret alone, 33 had brandy. Of this number, 110 were typhus patients, of whom 26 had stimulants. The mortality in the typhus cases was 8 per cent.; in all other cases, $3\frac{1}{2}$ per cent. The brandy in all the fatal cases was commenced from the first to the fifth day. In that period, I had two deaths from typhoid fever; both patients had stimulants from an early date in the attack. I have divided the patients treated since the publication of this table under two heads; Table A: Total patients treated, with percentage of deaths; Table B: Total patients treated since January 1877. I had not an accurate record of the patients who had stimulants from February 1875 to January 1877, as the hospital wine-book was unfortunately mislaid. But the average number of patients who received stimulants was about the same as from January 1873 to February 1875, during which time 30 per cent. of all the cases had stimulants at some period of the fever. From January 1877 to June 30th, 1879, 36.17 per cent. have had stimulants. In typhus fever, stimulants were given during the first period to 23.6 per cent. of the cases, and during the latter, to 41.37 per cent. In typhoid fever, of 107 cases, 22 had brandy and wine, 27 claret alone.

Total percentage of typhoid patients taking brandy at some period of the fever	20.56
Total percentage of ditto taking claret at some period of the fever	25.23
Deaths of the former	36.36 per cent.
Deaths of the latter	7.40 "

Of 117 cases of simple continued fever, 5.12 per cent. were given brandy, and 5.12 per cent. claret. There were no deaths. In all these cases, temperature-charts of the disease have been kept. Sphygmographic tracings of several were taken during the illness.

TABLE A.—Patients Treated since February 1875.

Total number treated	589
Total number of deaths	47
Total number of typhus patients treated	239
Total number of typhus deaths	35
Total number of typhoid treated	147
Total number of typhoid deaths	12
Total number of simple fever treated	203
Total percentage of deaths (deducting nine, registered hopeless on admission)	6.45
Percentage of typhus deaths (deducting nine hopeless)	10.86
Percentage of typhoid deaths	8.16

Of the typhus patients who died, 9 were hopeless on admission, 7 were ill more than ten days, 1 was complicated with encephalitis, 1 was subject to epileptic fits, 1 was a confirmed drunkard, having taken according to his friends statement, "nothing but whiskey for ten days previous to admission."

Of the typhoid patients who died, 3 were ill more than ten days on admission, one was complicated with pneumonia, and one was a drunkard previously.

TABLE B.—Patients Treated since January 1877.

Total number treated	340
Total number of deaths	25
Total number of typhus treated	116
Total number of typhus deaths	14
Total number of typhoid treated	107
Total number of typhoid deaths	11
Total number of simple fever treated	117
Total percentage of deaths	6.17
Percentage of typhus deaths	8.62
Percentage of typhoid deaths	10.28
Total number who got brandy	58
Typhus	30; of whom 11 died
Typhoid	22 " 8 "
Simple fever	6 " 0 "
Total number who got claret (no brandy)	65
Typhus	18; of whom 0 died
Typhoid	27 " 2 "
Simple fever	6 " 0 "
Total number treated without any stimulant	217

Of those typhus patients who died, 4 were registered as hopeless on admission, and 3 were ill over ten days.

Of the typhoid patients who died, 2 were ill over ten days, 1 was a drunkard previously, and 1 was complicated with pneumonia.

TABLE C.

Total patients treated since January 1873	899
Total typhus fever patients since January 1873	349

Of these, records of 226 show that 74 had stimulants of any kind, either during the fever or convalescence (several in this latter period). In typhus fever, 32.74 took stimulants, with a mortality of 7.16 per cent.

I may now sum up my conviction from bedside experience of the value of alcohol in fever. It is a most valuable therapeutic agent in both typhus and typhoid fever. A large percentage of cases not alone do not require it, but its administration is apt to lead to complications. It is impossible to lay down rules as to the stage of the fever in which

it may be indicated, as this indication depends rather on the type of the fever than on its stage. But the time to watch for its administration in ordinary cases is from the eighth to the twelfth day. Early administration of alcohol in fever is injudicious. I have little faith in the early employment of stimulants preventing an adynamic condition, and I have rarely seen them have a good effect in the early stages of the fever of habitual drinkers. I am inclined to think that it is a dangerous fallacy to regard them as essential in such cases. Of the two, I have more often seen hard drinkers recover without stimulants than with them. Alcohol, in my experience, has little effect on the temperature of fever.

I generally take as my tests the age of the patients, the condition of the heart, the pulse, tongue, and head symptoms. Young patients, as a rule, do well without stimulants. A feeble, irregularly acting heart, with weakened first sound; a compressible and rapid pulse, a tongue keeping fairly moist, the absence of violent head symptoms, encourage me in their continuance and use. I believe that we possess in alcohol a supporting food, in those typhoid states where assimilation is difficult, and I have many times seen lives saved in fever, sustained for days by brandy and milk alone, where everything else had been rejected.

The practices I conceive most to be deplored in the administration of alcohol, are (1) the indiscriminate employment in the earlier stages of fever; (2) the rash continuance and the increase of the quantity used, when the symptoms clearly show that it is acting injuriously.

I cite one case of typhoid fever, to illustrate the value of stimulants, judiciously administered at the proper time, with their effects carefully watched.

The patient, a girl, had been ill three weeks before admission. The following was the train of symptoms. Temperature range, with marked exacerbations, first week, 102° to 105°; second week, 100° to 105°. On admission, there were crepitation over both lungs, rusty sputa, rapid respiration, constant stools; severe epistaxis. She was deaf and delirious. She passed a large hæmorrhagic stool a few hours after admission, and passed in twenty-four hours four such stools; for days she had involuntary ones. A note was taken twice during the first week of her being "cold and listless; pulse hæmorrhagic". All through, the tongue kept moist and fairly clean. The motions were very frequent for some days. She had occasional attacks of hectic, followed by profuse diaphoresis and cold sweats. This girl was one of the worst cases of typhoid fever, if not the worst, I have ever seen recover. Her treatment during the period of hæmorrhage was almost entirely non-stimulant, consisting of milk, beef-essence (in small doses), fowl-broth; and as medicines, digitalis, ipecacuanha, and Dover's powder; quinine, opium, sulphuric acid lemonade, gallic acid; acetate of lead and opium enemata; the usual local applications to the abdomen, and tepid spongings every fourth hour to the trunk. On the seventh day after admission, the note entered was, "pulse duplex, dicrotous, feeble". She was given brandy and milk every fourth hour, and an ounce of claret every second hour. She was put on a mixture of muriated tincture of iron, tincture and infusion of digitalis, spirit of chloroform every third hour. This was changed subsequently for quinine and digitalis. She refused all stimulants on November 18th, and from this to January 4th, she took none. She had milk diet mainly. After stimulants were first given, the note entered was, "looks better; pulse improved; stronger".

HOW ARE WE TO DEAL, BY ISOLATION OR OTHERWISE, WITH CONVALESCENTS FROM ACUTE INFECTIVE DISEASES, SO AS TO LIMIT THE SPREAD OF THESE COMPLAINTS?*

By ARTHUR RANSOME, M.D., M.A., Manchester.

IN selecting this subject for special discussion, the committee, who have had the arrangement of this meeting of the Association, have probably desired to call attention to the present unsatisfactory position of the question, rather than to elicit any very novel remarks concerning it.

Our information respecting the limits of contagiousness of different diseases is, of a truth, of the most meagre description; and our practice in reference to this subject is based upon limited personal observation, or upon tradition handed down from seniors to juniors in the profession. And yet the practical importance of the subject is very great, and if it were to be measured by the number of times that medical men have to answer questions relating to it, the need for its settlement would soon be shown to be very urgent.

* Read in the Section of Public Medicine at the Annual Meeting of the British Medical Association in Cork, August 1879.

Men engaged in general practice have frequently to accept weighty responsibility in regard to the return of children to school, the period at which servants may re-enter their masters' families, or the length of time that patients should remain in hospital.

Since the passing of the Public Health Act of 1875, also, legal questions may arise under clauses 126 to 129; and hospitals for the reception of infectious diseases are now, under the same Act, rapidly springing up in all parts of the kingdom.

Yet, at the present time, strange as it may appear, there exists no body of evidence, sifted and verified by competent observers, to which reference may be made in cases of doubt. A few men are perhaps honest enough to confess that they have no scientific basis for their opinions; and, although I applaud this attitude of mind as justified under present circumstances, I submit that such a confession is not likely to raise the public estimate of the value of medical science. Others, again, do their best to fix a limit, and generally, for safety's sake, make the interval long enough to cover the region of doubt. Hence not unfrequently ensue loss of time, loss of money, and, I may add, loss of temper or of confidence on the part of patients.

But there is another and more serious result of this individuality of opinion, of this want of some authorised doctrine on these points that are so frequently brought before us. Very frequently a serious difference of opinion ensues between two sets of medical advisers, the family attendant often differing widely from the school or hospital physician in his estimate of the needful interval of isolation. Even without a sufficient foundation of facts, if the medical world were agreed as to the limit of safety, there would perhaps not be much harm done, beyond the probable waste of time involved in getting to the safe side of precautionary restrictions; but, unfortunately, even this refuge is withheld from us, and a medical man, after giving his own opinion on the subject, is not unfrequently told that his neighbour, Dr. so-and-so, has fixed a less onerous burden of quarantine, and thus confidence is destroyed, and vexatious disputes are carried on without any court of appeal at which to settle them.

It is true that some few attempts have been made to place these matters upon a better footing than that of mere individual opinion, but little as yet has been accomplished in this direction.

Seven years ago, the Lancashire and Cheshire Branch of this Association, at my own request, appointed a committee on the Duration of Infection, and its attention was also directed to the subjects of the Period of Incubation, and the Commencement of Infectiousness. In 1873, also, Dr. W. Squire read a paper before the Royal Medical and Chirurgical Society on "Periods of Infection in Epidemic Disease"; but it would not be possible to found canons of practice upon the data therein contained. The results of the inquiry by the Association Committee were given by Dr. Haddon of Manchester, the honorary secretary, in June 1875, and again in the form of a paper read before the Manchester Meeting in 1877.

From these sources, however, it is evident that, though much very interesting and important information has been collected respecting the periods at which such diseases as whooping-cough and measles, small-pox and scarlet fever, first become infectious, and also some very clear and definite evidence regarding the periods of incubation of many diseases of this class, still very little has been learnt on the subject of the possible or probable duration of infection. We are thus thrown back upon our own experience in the matter; and in offering my own views upon the question propounded by the Association, it must be understood that they are simply opinions gathered during a long and busy practice, and that they could not be allowed to weigh for an instant against opposing facts brought forward upon sufficient evidence. The acute infective diseases, then, of which we might hope or care to limit the spread by isolation or otherwise, are, measles, whooping-cough, typhoid and typhus fevers, cholera, diphtheria, small-pox, and scarlet fever.

Measles and Whooping-Cough.—In the first place, I consider it hopeless to attempt, by quarantine or isolation of any kind, to arrest the spread of measles and whooping-cough. In my own experience, these complaints are most frequently caught in their early stages, often before the occurrence of their characteristic symptoms; in whooping-cough before the whoop, and in measles before the rash appears. It appears to me undesirable, therefore, to set in motion the onerous regulations of the Public Health Act in respect to these diseases, or to send any cases into hospital for the purpose of isolation. In the event of a serious fatal epidemic of these complaints, it would be far better to try to save life by issuing instructions as to their home nursing, or even by sending trained nurses into the districts especially needing such instruction.

It is well known that very few deaths from these diseases take place in the families of the upper and middle classes of the community; yet,

in England and Wales, they kill nearly as many as the more serious disease, scarlet fever, and four times as many as the much more dreadful diseases, small-pox and cholera.

I believe that most of these deaths might be prevented by timely instruction to the poor as to their proper management; and isolation, unless it could be carried out from the first appearance of catarrhal symptoms, would be of very little value. In schools and large public institutions, possibly, this might be done; and, from my own experience, I am inclined to believe that a separation of a case of measles for about three weeks after the disappearance of the rash, and a subsequent thorough stoving of clothing, etc., with sulphur fumigation of rooms and furniture, will, in most cases, be sufficient to prevent infection. In whooping-cough, probably, about six weeks' isolation would be sufficient, even though the whooping may not have disappeared; but upon this point we are sadly in need of trustworthy evidence. The disease is assuredly most infectious when accompanied by catarrh, and in the early stage.

Typhoid and Typhus Fevers.—It is no doubt convenient to be able to send cases of typhoid fever to a hospital, but this course is rather to be chosen for the sake of treatment than for the purpose of preventing infection. This disease is to be arrested so much more surely by disinfection of the excreta and care as to drainage and water-supply, that I should deprecate any large provision of hospital accommodation for such cases. A large hospital for the reception of cases of a disease that ought to be entirely prevented, would certainly be a mistake. I can also give no definite surmise as to how long the stools of typhoid patients continue capable of conveying this disease.

The duration of infection in typhus fever is also beyond my power to determine, but it is undoubtedly one of the diseases whose progress as an epidemic may usually be arrested by timely isolation of the first cases, and by improved hygienic conditions.

Cholera.—It is probable that the statements made respecting typhoid fever would apply equally to the subject of cholera.

Diphtheria.—In the present state of our knowledge respecting diphtheria, isolation of cases of this disease should certainly be practised, either at home or in hospital; but in my experience, it has proved only very slightly infectious, except in cases accompanied or followed by the appearance of the peculiar scarlet rash. In these instances, it would also be unsafe to break the quarantine until desquamation, if it take place at all, has been completed. Some of these cases much resemble scarlet fever, but there are interesting points of difference into which this is not the time to enter. One of these, however, is, that they are certainly less infectious than cases of the latter disease. Diphtheria, again, is so frequently spread, if not originated, by noxious emanations from sewers, cesspools, etc., set free by imperfections in house-drainage, that care with reference to these points would certainly do far more to stamp out this complaint, than all the machinery of isolation and disinfection.

There remain now two disorders, small-pox and scarlet fever, for which especially it might be supposed that means of isolation should be provided; but one of these two, small-pox, ought to be so thoroughly prevented by efficient vaccination and revaccination, that there should in future be little need for hospital accommodation.

Scarlet Fever.—It will thus be seen that the only disease for the prevention of which isolation is likely to be needful permanently, is scarlet fever.* Even for this complaint, large hospitals are not the best device for the purposes of isolation. The establishment of comparatively small reception-houses in different parts of a town, according to the plan advocated by Dr. Radford of Manchester, would seem to be by far the best mode of preventing the spread of this disease. With regard to the limit of safety in the period of infection of scarlet fever, there is fortunately a general consensus of opinion amongst medical men, and that is, that, whilst no limit can be assigned to the duration of infection in clothing and other fomites, the person of the patient ceases to be infectious on the completion of desquamation. It is possible, however, that, in certain cases, in which Dr. W. Budd's disinfectant treatment can be carried out during convalescence, this period might be materially abridged. I have from the first adopted Dr. Budd's plan, and it has happened several times in my practice, that patients have broken quarantine before desquamation was completed, in two instances within three weeks of the outbreak of the disease, and yet no harm has in any case come to the other members of the families. If

* May we not hope that the zymogen of even this disease may be found to be destructible by some other means? In that happy time, when preventive medicine has been thoroughly carried out, when houses are properly ventilated, when drainage and sewerage are perfected, when the water and milk supplies are unpolluted, and when vaccination has been universally and completely performed, at this much desired epoch, to which it may be hoped we are advancing, hospitals for the reception of cases of other diseases will be an anachronism, and scarlet fever alone will have to be provided for.

similar testimony to this could be obtained from other observers, it is possible that, in such cases as I have mentioned, we might inflict a shorter term of imprisonment. In the meantime, we must of course go upon the old lines.

I need hardly again mention the necessity of a thorough stoving and disinfection of clothing, furniture, bedding, etc.; and yet it is certain that, even at fever hospitals, this essential measure is often neglected. I have known several of these institutions that were left for years without any provision for this process.

It will be seen that I am no supporter of the craze, now so prevalent, for building large and expensive permanent hospitals for infectious diseases. I am strongly of opinion that the erection of small buildings, with power of extension when required, by means of well devised and well ventilated wooden wards, would be the best course to take in most instances. I think that there are many obvious reasons for the adoption of this plan in preference to the one now usually followed. Amongst these are, greater economy, increased efficiency, and the power of thorough disinfection, or destruction even, when required; but there are two or three further considerations favourable to this view that have hitherto attracted little attention. I have ventured to mention these before, in a paper on "Epidemics", read in 1867 before a meeting of the Association at Oxford, and in one upon "Epidemic Cycles", read before the meeting in Manchester in 1877.

I cannot well enter into these considerations at length at the present time, as each would require a separate discussion and proof; but, briefly enumerated, they are: 1. The shape of the curve of the wave of epidemic disease, first noticed by Dr. Farr, and the possibility of calculating its rate of advance and of decline; 2. The singular mode in which epidemics have usually been found to succeed one another, noticed by Sydenham, in his *Medical Observations* (section 4, chapter i) — "As one nail drives out another, so does epidemic drive out epidemic"; 3. The fact that epidemic disorders, which chiefly affect certain organs of the body, are most common at the season of the year when other non-specific affections of those organs are prevalent, and in the places most favourable to these latter diseases; 4. The existence of definite cycles of epidemic diseases.

These phenomena of epidemics tend to show, first, that it is improbable that a hospital will be much needed for several epidemic diseases at the same time; and, secondly, that it may perhaps be possible in the future to foresee the times and the seasons when the need for the services of a hospital will arise.

HOW TO DEAL WITH CONVALESCENTS FROM ACUTE INFECTIVE FEVERS SO AS TO RESTRAIN THEM FROM COMMUNICATING DISEASE.*

By FRANCIS VACHER, F.R.C.S.E., Birkenhead.

How to deal with convalescents from acute infective fevers so as to restrain them from communicating disease, is a question which must often perplex medical officers of health. In the first place, the law gives us very little power over such cases (the 124th section of the Public Health Act is scarcely available as regards convalescents); and, secondly, our being able to influence those in charge is exceptional; so that, although we may formulate rules for dealing with convalescents, we cannot, either by fear or by favour, ensure that they are carried out. Again, in some cases, where confidence is placed in us and our counsel sought as to the disposal of a particular convalescent, the course of action we prescribe may be beyond the slender means of the person advised. Thus the difficulties in dealing with convalescents from infective fevers are very great, even when we have intelligence about these sources of danger and know where they are; yet it is probable that, for every case about which we have information, three or four are not reported, and go through the acute attack and period of convalescence, ministering relatives and sympathising friends receiving and carrying the contagium in all the luxury of full liberty.

If, therefore, convalescents from infectious fevers are to be controlled so far as may be necessary to prevent their prejudicing the health of the community, the sanitary authority exercising control must have three things—information, powers, and accommodation.

By "information", it will be understood that I mean compulsory notification of infectious disease. Unless people are required to notify cases under a penalty, the sanitary authority rarely hears of them, except from alarmed neighbours, or when a fatality has made further secrecy

impossible. Happily, compulsory notification is no longer a mere idea of theorists, but an accomplished fact at Halifax, Bolton, Nottingham, Jarrow, and Burton-on-Trent; and the example of these towns in this matter is being followed at Derby, Exeter, Leicester, South Shields, Blackpool, and Warrington. The necessary powers could be obtained by most urban authorities without any opposition worth the name. The notification should be required of the householder, a lodger or sub-tenant being required to notify to him. In case the householder is himself infected, and disabled from notifying, the obligation should rest on the person in charge. The medical practitioner in attendance should be required to certify (on a form supplied) to the householder or person in charge, and be paid a fee for every such certificate by the sanitary authority.

I need hardly point out that knowledge of the position and circumstances of every case of infectious disease in a district is of very little use to the responsible officer of an authority, unless he can place efficient restrictions on the movements of the infected subjects, and, so far as may be practicable, prevent them from returning to their ordinary avocations and the duties of life till certified free from infection. No doubt some of the towns, in which compulsory notification is provided for, have already discovered that notification without power to control the movements of patients reported is somewhat embarrassing. To be useful in any comprehensive sense, it must be backed by such powers as are not given in any existing Act. Having advice of a fever-patient in the acute stage, or convalescent, let us see what restraint we can put on him. When a suitable hospital is provided or accessible, a person suffering from any dangerous infectious disorder may be removed thither, by justice's order, provided (1) he is without proper lodging or accommodation, or (2) lodged in a room occupied by more than one family, or (3) is on board any ship or vessel. An infected subject in a common lodging-house may be removed by the local authority without a justice's order. Thus any infectious patient properly lodged and accommodated (interpreting the words in accordance with the context) is under no restraint, except that he renders himself liable to penalty if he "wilfully expose himself without proper precautions" in "any street, public place, shop, inn, or public conveyance". With such limited power, what can the sanitary authority do except take charge of a few neglected cases, and issue an occasional summons in respect of wilful exposure?

I have said that intelligence as to fever-cases is of very little use without power to deal with them. It is certainly not less true, that power to remove and isolate cases can avail nothing unless we have fit places for their reception. The accommodation wanted is of two kinds; viz., hospitals for the reception and treatment of patients suffering from infectious diseases, and *homes for convalescents*. Accommodation of the first kind has been provided or contracted for by many sanitary authorities, while the bare fact that there is a demand for the other accommodation is scarcely yet recognised. Indeed, inasmuch as local authorities are only empowered to provide hospitals or temporary places for the reception of the sick, it is doubtful whether any special provision for the accommodation of convalescents can be legally made; and yet such homes can be effectually provided by the sanitary authorities alone. The failure of the recent attempt in Dublin to raise funds for a home shows that the work is not one which may be safely left to private charity; and as for private enterprise, it would be idle to expect much assistance from that source. Of the large number of existing convalescent homes in the United Kingdom, whether proprietary, supported by subscriptions, or maintenance charges, scarcely any are available for convalescents from infectious fevers—that is, without regard to considerations of expense. Instead of being homes for convalescents from infectious disease, they are homes for all other convalescents but these.

The Charity Organisation Society is now preparing as complete a list as possible of existing convalescent homes, with particulars as to the class or sex for which each home is available, and the extent of accommodation offered. When this list is issued, it will doubtless furnish more reliable information about convalescent homes than any at present within reach, and we shall know proximately how many beds there are at the service of patients recovering from fever. My own experience—and I live in a part of England liberally supplied with convalescent homes—is, that I know of no institution to which I can send infectious convalescents, and the result is seriously to detract from the usefulness of my fever-hospital. I am obliged either to retain patients in hospital during weeks of an often protracted convalescence, occupying ward-space which could be better employed, or to put them out into lodgings in an adjoining street, where they are subject to very imperfect control, and may sow contagium outside the circle of those who voluntarily accept whatever risk the accommodation of such lodgers implies. I need hardly say that, having no convalescent home to which I can draft off patients, I much prefer to keep them in hospital till I am able

* Read in the Section of Public Medicine at the Annual Meeting of the British Medical Association in Cork, August 1879.