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Submitted (but by mistake too late) in 1902.
I wish to make a few general observations on pneumonia and some of its complications and related diseases suggested to me in my experience of a considerable number of cases in private and hospital practice. As systematic consideration of the subject is attempted, but I have discerned and laid stress upon any practical point which have occurred to me that I have found of especial value in practice. Many of these important points I have looked in vain for guidance upon in text books, and have only learned them by toilsome and oftentimes bitter experience.

In pneumonia, pleurisy, empyema, etc., I am in the position of having seen these diseases from the point of view of surgeon, physician, and general medical attendant. As a general practitioner I have frequently been disappointed, when brought face to face with difficult cases at certain critical periods of my professional career, with the little help to be gained on many questions of practical value in treatment, surgical, medical, and preventive. As an operating surgeon, after becoming familiar with the operative work of the nature discussed in these pages, I have become convinced of the importance of many facts which ought in my opinion to be discussed with greater length, clearer, decision in the various text-books written for the student and general practitioner.
practitioner, and supposed to be suitable for his needs.

For a long time I have held that there is scope for a book in medicine and a book in surgery written to supply the many wants of the general practitioner, which should be far removed from the mass of ordinary medical and surgical text-books compiled in a systematic manner as they now are, chiefly for the use of students preparing for their qualifying examination. I once suggested this to a surgeon attached to a large London hospital, and he informed me that he had been approached by a firm of publishers to write such a book on surgery. The difficulty in preparing a book of this kind has evidently, however, been too great for him to face, and such a book is not at present to be found on the market.
Treatment.

For successful treatment of the disease, its nature and effect, primarily and secondly upon organs, must be thoroughly understood and appreciated in their many and varied inter-related reaction.

We may take as reasonably proved that pneumonia is a microbic affection dependent upon growth and multiplication of the diplococcus pneumoniae (stricker) in the blood and organs, with the formation of poisonous toxins which prejudicially affect the vitality and therefore correct functioning of many organs.

Granted this, the medical attendant has to consider in the treatment of a case the possibility of:
1. Destruction of the malacic morbi (germs),
2. Prevention or inhibition of their growth,
3. Removal of products of growth (toxins),
4. Neutralization of toxins,
5. Protection of organs from attack by germs or toxins,
6. Exaltation of resistant powers of organs against such attack.

Little or no effect on toxins can so far as we know be obtained by drugs. Though a priori there is no reason why some drug cannot have such effect, like quinine in malaria, potassium iodide in syphilis, relief of soda in rheumatic fever. When the pneumonia is according to the condition then quinine, potassium iodide, relief of soda, are of value.

In ordinary pneumonia however it must be admitted that no drug having a specific effect on the disease has yet been discovered. We are therefore reduced to some
serum anti-toxin analogous to those anti-toxins which have been used with such great advantage in diphtheria. Wrickbom and others have produced immunity in animals by hypodermic injection of culture, but no decided results have yet been obtained in man (Dr. Peele's medicine 1898, p. 112-3).

It has however been proved that the blood serum of animals immunized by inoculation with these attenuated cultures will protect other animals, and it may therefore be reasonably expected that in the future some efficient anti-toxin may be discovered which will safely and surely arrest the development of the pneumococci in the human creature.

It must also be remembered that pneumonia is not strictly comparable bacteriologically to diphtheria. For in the latter affection there is no invasion of body with germs, but these remain on the surface and manufacture the products, which are directly absorbed and produce toxaemia. There is in pneumonia a pneumococci invasion of blood and organs, with brevity of toxic substances in addition, which however in some way serve to arrest the action of the microbic virus. The profound difference in the nature of attack is seen in the fact that pneumonia is not so protective but rather predisposes to further attacks. In diphtheria and most of the other specific affection the reverse is the case. Frequently there is a multiple infection by hygienic organisms like streptococci pyogenes and staphylococci pyogenes aureus and albus. Pneumococcal septicemia must therefore be sharply distinguished from diphtheritic toxaemia.

"Immunity against the effects of virulent culture has been successfully obtained in the case of susceptible animals by previous inoculating them with attenuated or with filtered cultures. The serum from such immunizing animals is protective venenous for other animals." Curtis, Medical Bulletin of the Great Lakes, July 22, 1914.
Failing a direct cure on these lines we are limited to general and symptomatic treatment. The principle underlying this treatment is to put the patient in the best possible position for resisting attacks from bacterial infection and pollution. This can be considered from several aspects: (1) the reservation of cardiac and respiratory strength, directly and indirectly, and the preservation of the healthiest possible blood conditions by regulating income (food, digestion, assimilation, metabolism). (2) Limiting expenditure (rest, physical and nervous, by prevention of unnecessary movement or talking, by inducing rest or sleep, soothing pain, checking delirium, preventing undue rapidity of heart and respiration, aided by good nursing). (3) Removal of waste products, which means healthy action of skin, lungs, kidneys, bowels. (4) Anticipation and prevention of onset of complication whenever possible. (5) Recognition of the personal equation in the varied and mixed manifestation of the disease, and taking account of it.
Herein lies the psychological element of treatment—expressed by the phrase "treatment by suggestion." It means the personal infusion into the patient of encouragement, hope, faith, confidence, sweet reasonableness, the soothing of watchfulness and anxiety, the substitution of doubt by decision, of darkness by light—in sum the substituting in the curative realm of these calmer hypnotic influences which tranquillise the higher cerebral centres which are in intimacy related with the lower organic centres of heart, respiration, etc.

To obtain these effects treatment can be discussed under the heads: (1) General, (2) Symptomatic, (3) Expectant, (4) Complication, (5) Personal (vital anti).

But it does not come within the province of this paper to discuss the treatment of pneumonia in action as this is excellently done in the many standard treatises on the subject. I propose therefore only to reflect in a discursive manner on certain principles and side issues as they have specially appealed to me as a general practitioner having had some special experience in this subject.

It must be remembered that patient respiration is more or less dependent upon healthy intra-diaphragmatic physical conditions, that any gastric or intestinal distension will not only cause uplifting of diaphragm and interference with its free movement, but also direct compression of lung, with consequent impaired air entry and obstructed circulation of blood through pulmonary capillaries. This complication will therefore appear synthroid by air and blood deprivation, and throw unnecessary work on the right ventricle.

Again, any functional interference with stomac
or bowel must cause impaired digestion, absorption, and assimilation, which means loss of power of nourishment, thereby impoverishing blood condition, and formation of additional toxins in the alimentary canal, which may be absorbed to the detriment of the patient.

No strict rule of dieting can be laid down. Each case must be treated on its own merits by the special application of general principles of dietetics to specific cases. I would specially warn against giving milk in excess. Most of my patients did well on less than two pints of milk with meat extracts like Brandt, or Valenti, or raw meat juice, and egg yolk in rotation, varied with the particular desires and idiosyncrasies and needs of the patient.

It is astonishing the number of patients who cannot take milk. In these cases milk should not be ordered.

It may not be out of place to insist here upon the oft forgotten fact that nutrition depends not simply on ingestion, that the stomach is a natural receptacle of food, not mere of food-stuff, that the stomach of a patient is a sick stomach—dry, probably congested, spastic, dilated, therefore fully digestive and absorbent, and that the assimilative machinery is out of gear, and the natural refuse ducts are temporarily blocked by rubbish accumulation. It is certain therefore that the old saw of "alter a few" contains truth as well as age. But here again I would say consult your patient; for I have known patients with temperature 105° eager to consume a beef steak, and how often a patient with a normal temperature is eager for nothing. But beware of overfeeding, whether with few or without. Educate the parents at home the future parents at the school to more healthful living conditions.
Further, keep a watchful eye in pneumonia on the stomach its function is
regular by causing it, and by attention to complaints of flatulence etc., and secure
the patient wise by initial dose of calomel.

Attributed to Dr. Lattimer from notes preceding this,
on the treatment of a case of entero-

fever, which as in principle almost completely applicable for the
treatment of pneumonia:

"The food must combine the qualities of ease of
digestion with the least residue because of the prolonged fever
and the excessive constitutional weakness of the patient reducing
the digestive organs to the lowest degree of efficiency (a) possible
decomposition of residue and consequent irritation of bowel.

The food which is most perfect is milk to the
extent of three or four pint in the 24 hours. Recognizing the
fact that the casein of milk is thrown down in the stomach in
solid masses it is important to secure the formation of the
smallest curd, which will be the most easily and completely
digested in the stomach. Therefore it is advisable in all
severe cases of the disease to dilute the milk with linseed
soda water, or other alkaline water, or to thicken it with barley
water. Best food, eggs, arrowroot, or cornflour—which alkalizing
or thickening with dilution serves for chemical and mechanical
reasons to secure the desired result.

If in spite of this curds are passed in the
motions, or symptoms and signs of indigestion (stomach) arise,
before finally concluding that milk is unsuitable for the
patient it may be advisable to predigest the milk by partially
or completely pasteurizing it.

In certain "acute" cases of diarrhoea
decomposition of curd of milk are said to play an impor-
tant roll.

In addition to milk, and in pleasing
alternatives, with it according to fancy of patient, may be given.
(1) Beef extract or essence - beef tea, Brandy essence, Valentine meat juice, bouillons, (2) Broths - chicken, mutton, (3) Clear soups.

It must be remembered that beef tea is (perhaps) stimulating and but little nourishing, so that a combination with milk or other nutrition food is necessary. In excess it may cause a looseness of bowels, describing known as "beef tea diarrhoea," so that it must be given cautiously in diarrhoea cases, more freely where constipation exists.

Gelatinous or jellies, it may be noted, are of inferior nutritive value as food stuff. Gelatin is however, easily digested, absorbed and assimilated, and by replacing ordinary albumin (circulating albumin in contrast with "fixed" or "tissue" albumin) prevents tissue wast in typhoid condition.

Cold drinks may be given ad libitum—cold water, hot water, lemonade, imperial drink; and the nurse must remember that in this as in other affections thirst need not always be quenched with drinks of milk.

In very bad cases, it will be necessary for the patient to be fed regularly night and day so that the vital power may receive rich. A dangerous low sht on account of an empt stomach. On the other hand, the danger of overfeeding must be recognised, with the possible evil tams, of indigestion, flatulence, and distension of stomach and bowels, with consequent cardiac and respiratory embarrassment through uplifting of diaphragm.

It must be borne well in mind that the patient lives on what is digested, not necessarily on
what is swallowed, and it is desirable as frequently to descry on post-mortem examination a "heaped up" condition of stomach which could only have excited nausea and worry anti-mortem discomfort or pain whereby death must have been accelerated.

**Abdominal complications.** In any condition of abdominal distension the principle of treatment are (1) to prevent fermentation, (2) to assist bowel to increase peristalsis to expel gas, (3) to mechanically allow escape of gas by passage of long rectal tube, (4) to prevent perforation of bowel by peritonitis. Therefore treat the cause, dietary and otherwise.

As an example of such an abdominal complication I cite this case. Private S., age 18, was admitted to hospital suffering from double basic pneumonia. The disease was of severe type, and was from the first attended with considerable cyanosis and dyspnea, with temperature ranging from 102° to 104°. On the sixth day of illness some abdominal distension was noticed which aggravated the general condition. On the 8th day the distension was extreme and the patient had sunk into a delirious, semi-coma, deeply cyanosed state, with lungs difficultly congested and seeking, as characterized by the presence of large bubbling sounds and feeble breath sounds. Oxygen inhalation, turpentine enemata, etc., stimulant expectorant had been tried with little or no success. It was then decided to secure vomiting if possible, to empty thereby the bronchial tubes of their accumulated secretion and exudation. With this object, at 11 a.m. a mixture of a dessertspoonful of mustard with half a dram of carbonate of ammonia in a tablespoonful of water was given, followed in absence of vomiting an hour later by a tablespoonful of mustard with ammon carb. and water.
as before. No vomiting resulted, but throughout the afternoon and night the patient had his bowels opened, with five each of flats, some 20 to 20 times. The evening temperature dropped from 103° to 100°, and in the following morning (9th day) it was 96.6°. The abdominal distress had completely disappeared, and the patient was feeling and looking much better. Convalescence was uninterrupted.

A case of pneumonia exhibiting a peculiar abdominal complication.—Pt. W. was admitted into hospital suffering from acute pneumonia affecting right lung, temp. 102°, pulse 116, resp. 32. The patient became markedly cyanosed, and quickly passed into a state of low muttering delirium. The physical signs rapidly extended, and the whole of the right lung became in the course of two or three days solid from base to apex. On the 7th day after admission (3 days before death) the patient developed abdominal pain and tenderness, accompanied by some tenderness and distension. There was also some diarrhoea, but no stools were saved for my inspection. The spleen was not enlarged, and no typical spots were to be seen. The left lung now also became affected, with aggravated cyanosis and resp. 60. The pulse, however, remained good, and the heart sounds loud and forcible. On the 10th day of illness (in hospital) it was noticed that a large, convex, circular, saucer-like swelling had formed below the costal margin on right side about region of gall-bladder. It was firm, very tender, dull on percussion, without skin discoloration. The patient was now very grave; heart-preserving sign showed signs of rapid failure, and patient was almost black in the face. A consultation respecting nature and treatment of swelling was held, and it was decided...
to give the patient his only chance of life by making an
exploratory incision, with local anaesthetic, over abdominal
tumor. Nothing however was found, even on opening peritoneum.
A very thorough and complete post-mortem examination threw
absolutely no light upon the origin and nature of the
remarkable swelling which was crusted and blended to have
had some obscure causal connection with the patient's abdominal
pain tenderness and distress, the disproportionate degree of
cyanosis, and the rapid cardiac failure. ‘The patient’, it may
be noted, had for some time been very intemperate.

The only explanation I can offer of the
swelling is that it resulted from a reflex, localised, muscular
contraction of abdominal wall - in fact this is the only possible
explanation, because the tumor disappeared post-mortem, and
all intra-abdominal condition that might have given rise to
it were proved to be absent. This case in my experience and
knowledge is unique.

I have met with in hospital at least one
case of acute pneumonia with abdominal signs and symptoms
and general condition so exactly simulating a case of enteroce
as to deceive an old Indian army officer. “The typical pulmonary
symptoms decided the diagnosis.

Vide Osler, Principles Practice of Medicine, 3rd Ed. p. 127,
“Staphylococcal, or Typhoid Pneumonia.” There are delirium,
shock, and early weakness. Gas tro-intestinal symptoms
may be present, particularly diarrhoea and vomiting. In such a
case seen about the end of the first week it may be difficult to
say whether the condition is one of staphylococcal pneumonia or one of typhoid
fever which has set in with early localization in the lung.”
In practice I have found it most necessary to bear in mind the possibility of pneumonia secondary to other affection, especially typhoid. This class of case is fruitful in error of diagnosis and in mistake of treatment which might only too easily lead to fatal result. I will only quote two cases which have come under my notice in practice:

J.C., act 27, suffered from an illness diagnosed "influenza complicated by pleurisy and pneumonia." Convalescence being protracted, the patient was sent to his native home for change of air. Practitioner no. 2 confirmed the diagnosis, ordered tonic and plenty of good nourishing food. Ultimately (? 3-4 weeks from onset of illness) a severe intestinal haemorrhage indicated the true nature of an illness which subsequently was most severe, prolonged, and nearly fatal.

W. McR., act 29, illness diagnosed influenza. Patient developed pneumonia about 3rd week of illness. I saw the patient in consultation with a practitioner at this stage, and was instrumental in setting a correct valuation upon the pneumonia complication by discovering typical rose spots, enlarged spleen, and distended and turgid abdomen of the entire patient.

Reverting to cases of pneumonia in which gastro-intestinal symptoms have obscured themselves and played a prominent part, this class of case has been designated gastro-pneumonia (Vide Godlee & Fowler, p. 37 of before). Also Vide Encyclopedia medicæ p. 426. - Dr. P. Paley describes a case of what he calls gastro-pneumonia in which the symptom closely resembled those of appendicitis. Abdominal section was performed — a perforate examination disclosed pneumonia associated with perforation.
There is no sense or reason in routine drug treatment in pneumonia, except perhaps to order a simple antibiotic mixture. As a matter of fact, I always do this in my practice. I believe that the doctor without medicine is like a person without a shirt—unsatisfactory. We must stoop to prejudice sometimes. It is bad practice for our patient and our pockets to run amuck against it. Therefore I order a routine placebo, which is certain I believe, harmless, but uncertainly I believe beneficial. Before my predecessor (who was happily young, unhappily inexperienced, but the product of a good medical school and all that) used tontini in his cases of pneumonia, without variation of dose, a "pneumonia mixture" of digitalis, strychnine, squill, etc. This mortality was high. Skoda and others have shown by statistics that the routine pneumonia treatment of this experienced and skilled predecessor likewise resulted in a high mortality.

Pyrexia— I have not met with a case of hyperpyrexia amongst my cases, and I am inclined to agree with Sir Douglas Powell that it is inadvisable to interfere with the temperature without special indication. On different occasions I have been impressed by the little inconvenience suffered by patients with temperature of 105°.

Generally I order piled changing, or the application of ice bags to vessels of neck, axilla, thigh, if patient exhibit symptoms evidently the result of temperature, viz., restlessness, insomnia, delirium, great rapidity of heart, etc. the age of the patient must be taken into account. A temp. of 103 in an old patient is a serious condition.
The rationale of any antipyretic treatment rests on the fact of continued fever acting as a myocardial poison and excitant of tissue degeneration, causing exhaustion through quicker living of tissue. High temperature also excites the nervous system causing delirium and delirium, and the treatment of these very resolves itself into treatment of their causes, viz. high temperature.

The antipyretic drugs (quinine, antipyrine, phenacetin, antipyrin, alcohol, etc.) are supposed to have some action on the heat centre, but as most of them are cardiac depressants, their use is attended with danger.

I would here also deprecate any routine treatment of pyrexia without full consideration of its cause and correlation with other symptoms and physical condition. It must be treated on its own merits or demerits, remembering that removal or relief of the symptom does not necessarily mean the relief or cure of the disease which is its source. Pneumonia is after all a short-lived affection unlike typhoid, and therefore it offers a striking contrast in the treatment of its typical complication to that of typhoid fever. Any condition however of hypothermia must be immediately and strenuously combatted by cold applications; and in connection with this matter one cannot fail to recall the experience so frequently cited of H. Bennett when the Swedish physician intervened on a certain critical occasion to save a patient suffering from hypothermia by the timely application of the cold bath.

I would prefer to consider pyrexia as a symptomatic sign of normal body reaction against toxins, and to a certain extent beneficial. — Das Heilfeuer of German authors.

"Above all, abstinence absolutely from taking with the so-called antipyrinics such a permit antipyrinics, such as contain antipyrinics in a very mild manner."
A medical practitioner has informed me of a fatal result directly following a dose of gr. 5 of antifebrin given to reduce temperature of a case of pneumonic fever. Many similar cases could be quoted when the antifebrin was administered in the beginning of the disease or even when given after the disease had run its course under a different treatment.

Pneumonia. Briefly, this may be due to:

1. Overfull and failing right ventricle, causing impaired pulmonary circulation.
2. Insufficiency of respiratory area in lung consequent upon pulmonary inflammation and bronchial obstruction from secondary bronchitis or pulmonary edema.
3. Failure of respiratory and diaphragmatic centres.
4. Complication like pleural effusion causing pulmonary collapse.
5. Pericarditis.

Methods of treatment vary according to the particular cause, and are considered in appropriate sections.

Cardiac weakness in treating cardiac weakness its causal factor must be considered:

1. Inflamed vague
2. Weak, possibly degenerated, muscle.
3. Overfull right and empty left ventricle.
4. Pericardial condition.

Then condition results from inflamed nutrition, circulation of toxins, and pyrogenic state. The overfull right ventricle is the result of two concomitant conditions: failure of cardiac muscle and pulmonary obstruction. In treatment, therefore, the cardiac muscle must be stimulated to proper action. This must be secured by such cardiac tonics as brandy, ether, ammonic, strophanthus, etc.

The pulmonary obstruction cannot however be removed except indirectly by inducing proper expansion of lungs by stimulating respiratory centre and emptying bronchial tubes by use of stimulant expectorant, removal of pleural effusion by tapping, and freeing of discharge by suitable relief of abdominal distension, and listening amount of blood in body and therefore in lung, by venesection.
Dilatation of right ventricle - This is shown by extension of dulness to the right of sternum, epigastri pulsation, distended and pulsating jugular veins, often by small rapid and irregular pulse, with marked cyanosis, congestion of ears of lung, weak pulmonary second sound.

It is in such cases that bleeding is sometimes indicated, which treatment then can be no doubt has been undeservedly neglected of late years. I have wished to use it in at least three of my cases in the Cambridge Hospital, but the military authorities are adverse to anything which patches of the nation of an experimental revival of the operating pest.

This form cardiac complication I have seen at its highest and worst development in alcoholics and in secondary form of pneumonia. I know of one young medical man who contracted pneumonia secondary to diphtheria, and who was fully alive to the possibility of the failure of his right ventricle. He diagnosed the onset of this complication by frequent percussion of his cardiac dulness, and prognostic his approaching dissolution from the evidence afforded by a rapidly extending dull spot to the right of his sternum.

He came with pneumonia secondary to a septi-thorax condition which was proved by bacteriological examination to be caused by a staphylococci and staphylococci infection. These cases rapidly sank into a typhoid state of low muttering delirium, dry brown tongue, failing pulse, etc., which condition did not react in the slightest to the most vigorous cardiac stimulant by digitalis, alcohol, hypotonic infusin of strychnine, etc., etc.

In the pure toxicemic form of pneumonia, which in my experience has been making the cause of death...
in young strong adults, I know of no treatment which will
avert against the cardiac paralysis which the toxin has
produced. In these cases, some anti-pneumococcal serum
is our only hope and until such treatment
is instituted in a very comparable with the use of anti-diphtheria
serum all medical treatment will prove in vain.

It is sometimes necessary to treat cases of
sudden cardiac failure, especially in alcoholic subjects, which
threatens to be speedily fatal. I have known such cases when
I feel sure that timely hypodermic injection of strychnine and
digitalis has been instrumental in saving life. In general practice
it is scarcely permissible to visit such urgency cases without
carrying a hypodermic outfit similar to that manufactured
by Burroughs, Wellcome & Co.

With regard to the value of oxygen, I have
used it pretty continuously from Stoker's bag in all of my
cases of pneumonia where cyanosis or dyspnoea has been
at all marked. I believe it to be beneficial, but to what extent
I cannot pretend to say, whilst readily admitting that
oxygen administration ought to assist in tiding patient over
respiratory difficulties until he has sufficient pulmonary with
which to breathe. My nursing sister, who at my request
have carefully watched its effect, seem to be agreed that it
is of value. Many of the patients I found liked it, and considered
themselves benefited by it. Dr. Stoker of the Oxygen Home,
Fitzroy Square, London, is convinced of its utility, and sums
up the treatment of pneumonia in two words "Champagne Oxygen"
Alcohol in Pneumonia—According to accepted teaching of the day alcohol is of use in febrile affections because it stimulates appetite, serves as a foodstuff, in that it is oxidized in the tissue, is a conservator of energy by preventing oxyhemoglobin from yielding up oxygen, thereby diminishing oxidation, lowering temperature by dilating cutaneous blood vessels and stimulating sweat glands.

The special indication for its exhibition are

1. Pulse feels rapid (over 120), irregular, markedly diastolic.
2. First sound tachyacous (called "embryonic" by Balfour from its likeness to the tick, tick, heart-sounds of the foetus).
3. Stress has been laid on the quality of the second pulmonic sound. At first, owing to pulmonary obstruction and a strongly reacting right ventricle, the pulmonic 2nd sound is accentuated, and is then of good significance. With a failing right heart and consequent "interferent" filling of pulmonary arteries, the pulmonic second sound becomes weaker.
4. Other indications of failing right heart are (a) marked epigastric pulsation. (b) Diminished cardiac dulness to right across sternum. (c) Sign of tricuspid regurgitation—a cystolic murmur, cystolic pulsation of vein of neck, congestive and oedema of lungs (not only of influenza portion but of those unaffected) due to the overfilling and weak right ventricle, a condition on a par with its failure secondary to mitral disease in a case of mitral stenosis. Congestive and oedema of lungs leads in turn to (d) blocking of bronchial tubes and obstruction of air entrance, which is shown by weakness of breath sounds, and the combined result of which is depressed respiratory function, failure of respiratory center, and congestive and oedema of lungs, with
or without bronchitis and pleural effusion.

(5) Failure of the heart results in improper cerebral circulation and leads to nervous symptoms—delirium, tremor, subacute, mimicking typhoid state.

My experience leads me to believe that only one-fourth of ordinary non-alcoholic patients do not require brandy. In the fulminating type, the seric and alcoholic brandy is often required, but I would not advise the quantity to be given. One can only be guided by continued and careful observation of the patient, and the demands, such an amount of time and attention as a medical attendant can vary afford to give to a single patient. I have watched patients how by how careful attention and care, the best results are obtained by certain definite amount which can only be accurately gauged by noting carefully at short intervals the state of the patient. If the doctor suspended the good is undone and from results, so that the best state of the patient is worse than the first, and it were better had alcohol not been given at all.

I doubt whether many of the profession fully realize the importance of this can in ordering stimulant. I am in the habit of instilling the nurse in charge of the patient to make frequent careful observations and give brandy in great or less frequency and doses according to the varying needs and condition of the patient. The indication of its benefit are seen in increased strength and diminished rate of pulse, less frequency and greater depth of respiration, less dyspnea, better color.
lower temperature, clearer tongue, moist skin, diminished delirium, and calmer condition generally of the patient.

I seldom order above ten ounces of brandy in the 24 hours, and agree with the opinion given by Dr. Chisholm in his eulogistic lecture that alcohol must be used with care on account of its narcotic effect in cases of great anxiety.

Occasionally patients in virtue of some idiosyncrasy do not react satisfactorily to brandy. It is poisonous harmful to them. It excites them, prevents sleep, quickens the pulse, and causes gastric irritation, as evidenced by the dryness and furrowing of the tongue. In such cases other stimulants such as ammonia or strychnine must be given.

I would again draw attention to the varying needs of the patient, and the futility of ordering definite amounts of stimulants at definite times without having some idea of the intelligence of the nurse in charge of the patient, or in civil hospital the resident house physician or surgeon.

Frequently about the crisis have my cases caused special anxiety by showing cardiac weakness and general fearlessness which have called for large doses of the stimulant. It may be that the fall of temperature means the loss of a stimulating influence on the heart. The ordinary medical officer has frequently in my absence been called to patient because of supposed collapse which has proved to be the crisis preceding uneventful recovery.

I would protest against the routine exhibition of brandy in all cases, and especially its indiscriminate
use in large doses, for it has grave potentialities for harm, and certainly predisposes to respiratory paralysis and thereby pulmonary, hepatic, or other congestions, besides upsetting digestive organs, and alarming if not actually burning and paralyzing the cardiac and respiratory centre whose supreme vitality is of such paramount importance in pneumonia. Alcohol is an abnormal constituent of the blood, and may be viewed as a poison to be executed thereby under and unnecessary taxing executive organs, unless it is then to perform some useful and specific purpose.

By causing increased tissue change and useless stimulation of the heart &c. alcohol also adds an needless wear and tear of tissues which it is the duty of the therapist to lessen to a minimum.

Grave years ago wrote: "It is of the utmost importance to economize the patient's strength in fever. The very act of lifting him up or moving him from one side to another tends to produce exhaustion." Have newer true words been written! yet do we sufficiently think of this in ordering large amounts of alcohol to our patients? The uphill road of disease is too steep enough to climb by the patient without. the physician irrationally applying the check of drugs to so tired the patient that his reserve power is consumed before the crisis of the hill-top is reached.

This is no mere figure of speech. The intelligent physician must anticipate the crisis, and it often requires all the resource of judgment to foresee to tell when the expectant treatment must be merged into the active one of drug administrator. We must learn more patiently to play the
"waiting game", to hold our hands, and to realize more fully that we are doing nothing often enable the patient to do something better.

In discussing effect of alcohol on the excretory organs, for example kidney, and the possible damage it may do as a poisonous agent under abnormal conditions that exist in febrile affection like acute pneumonia, one may recall a well-known causal combination of the alcoholic man exposed on the doorstep at night and catching a chill which results in acute nephritis.

The kidney may be considered as now being subjected to an excretory strain through the intaking of an excess of alcohol and as being in a congested condition predisposing to disease. The additional injurious effect arising directly from the chill serve to further upset the balance of health, and are a potent factor aggravating the congestion to a state of actual inflammation.

Similarly in pneumonia, the kidney an already strained by the excretion of toxic in the product of the pneumococcus. The addition of a further disturbing agent may, if not actually induce a nephritis, as lower the vitality of the renal cells as to lead to diminished excretory action, whether, through passive or active congestion or actual degeneration of renal cells.

It would be interesting to know whether acute nephritis occurring as a complication in acute pneumonia has been in alcoholic subject, or in patient treated by large doses of alcoholic stimulant.

In the manner that important organ of
metabolism and digestive function, the liver, may have its functions disorganized. Though any injurious action from excessive exhibition of alcohol in pneumonia is more or less hypothetical, the fact that so high a percentage of alcoholic patients succumb to this disease is, at any rate, evidence of the far-reaching deleterious influence that alcohol can have upon organs affected by the pneumococcus and the toxic product of its growth in the blood.

It is to be presumed that physicians who even today give such large amounts as 20 ounces or more of brandy to their pneumonia patients have reason, satisfactorily to themselves, for so doing. But their reasoning may be fallacious. It is now held that the ancient—fortunately now out of date—methods of treating pneumonia by heroic doses of alcohol and many other drugs only served to kill the patient and not to cure him, as that one may be sure for regarding with scepticism the principle and rule of practice enunciated with great force and direction by all physicians whom we have credited with sound judgment and sharp clinical acumen.

In reading articles on the treatment of febrile affections like pneumonia and typhoid fever, and the quantity of brandy considered necessary by many of them all physicians, I am never able to forget the statements of Dr. W. Jenner that he had seen in his practice seen a case of typhoid which necessitated in his opinion a large dose than 8 oz. of brandy in 24 hours. A statement so stern and unyielding in its dogmatism from such a high authority must command no
respect, even if it only serves to put the brake on opposing tendencies encouraged by those physicians who preach different therapeutic doctrines.

And respect for authorities whatever stamp or hell mark they carry must not be carried to excess. The age is an iconoclastic one: idols are broken, but many sculptors are carving.

And rigid rule of drug administration find exit place in medical teaching. We cannot standardize on patent capacity as we can on serum. "Laperin docis" has large application in medical science and art.

**Drug in pneumonia.**

This subject of administration of drugs in pneumonia must be fraught with considerable heartburning and anxiety to the conscientious physician. It must be conceded that if drugs are to be given at all they should be given for a specific purpose on the exhibition of signs of distress or draining of some body organ — for the relief of such distress or straining, or for the prevention of it by the prevention or removal of a malarious morbid, or by the conservation of vital forces of organs which are attacked by those morbid products brewed by the pneumocoei.

Unfortunately disease is so obscure in its action, so cunning in its attacking forces, hidden from sight in the varied blood trenches of the human body, that exactness will ever be impossible, and therapeutic science can be one of surmise and empiricism, capable only for the most part of faint illumination by rational inquiry or practical application.
This line of argument draws us into the 
expectant and symptomatic line of treatment, which must be
sound practice if in addition it means and includes the treatment
of the various and ever varying needs of the organism, and a
true appreciation of the intimate combination which may
possibly arise as the resultant product of the ailments from
which the patient suffers.

In my opinion, there is involved in the
precision of directed dosage of the drug, on nature, media
and therapeutics much reckless and irrational drugging of
patients. The fashion, especially among the young and inexperienced
practitioners, is to give a drug within the range of its minimum
and maximum dose without exact thought as to the immediate
object to be attained or the ultimate result that may accrue;
and this method is not, I think, sufficiently combated at the
present time by our leaders and teachers of medicine.

It is rare to see as I have often done, young
medical men consulting a pocket book of treatment and calling
therefrom prescription which they apply to the disease under
treatment, within the best expert physician, or the particular
type of disease from which the patient suffers. The maxim of
"take no thought for the morrow, feasts little place in medical
treatment," and it is the want of thought which stipulates
much treatment which has come within my observation, and has
led me to sympathize with the physicians who exclaimed
at the end of a discussion on the treatment of typhoid fever
"lymphoma, if I were seized with typhoid, I should at once
order a card to be hung on my bed bearing the not inconveni
letter, the words 'save me from my friends!" heavily much resem
and indiscriminate routine administration of drugs ought to be vigorously contested by medical teachers.

I would recommend the substitution of the "vic medicinum naturell" at the expense of the "vic medicinum," especially in a periodic and self-limited disease like scurvy and would deplore slavish adherence to the spiritual tradition.

And I would sound a further word of warning against the many medical catchwords and phrases and verbal make-believe which serve to stifle thought and enquiry, and which in the descriptive language applied by Sir Frederick Treves are but an "sounding brass and tinkling cymbals."

Military leaders are inculcating in the modern soldier the doctrine of initiative, intelligent circumstance, individuality of thought and action - self-help. I think the same doctrine preached from the medical pulpit would not be out of place as a change from the piling up of meaningless and misleading statistics and case records.

As has before been stated, if a drug is given at all it should be given for a specific object, and it should cease to be given when that special object no longer exists. It should be given therefore in sufficient doses to fulfil its purpose, and the cure cannot be satisfactorily attained by obtaining a certain dose at certain intervals without frequent examination of our patient to discover whether such dose at such intervals has produced the desired effect.

It is evident that in the business exigencies of a medical man's life it must often be impossible to give patent that supervision which the application of this principle in actual practice would render desirable, and this
in why I have taken pains in instructing my nurses and
nurse in charge of my patient to watch their cases on
intelligent lines, and have allowed them some discretion
in the administration of drugs, including brandy, in my absence.

For the system in a military hospital is distinct from that in a
civil one. Then the orderly medical officer represents the
resident house surgeon and house physician, and he knows
little or nothing of the case for which he may be suddenly
asked to prescribe.

It has frequently been a matter of anxiety
to me to know whether I should push a drug to obtain a certain
effect, and whether the continuance of such administration
would render such procedure of any benefit. I have before indicated that
a slight excess of stimulants may act perniciously, and by
increasing the pulse rate and exciting gastric and cerebral
irritation, undo the good that has been done. The question
I have been forced to ask myself on noting the slow and often
irregular pulse the result of excess of digitalis, is, whether an
undue quantity of this drug might not lead in the course of
pneumonia to a cardiac condition which would be prejudicial to
the patient's recovery, and constitute the clinical signs that
help one to decide when it is wise or not to give or not to give?

I have given digitalis in somewhat
larger doses in alcoholic patients with the object of stimulating
the failing heart, but the patient has not responded to the drug,
and has died in spite of this digitalis. How can I make certain
that the digitalis in these doses has not had a pernicious
influence which has been masked by other morbid conditions
brought about by the attacking pneumonia.
Similarly in the administration of chloral and opium, frequently I have been tempted to order corrosives to check delirium and restlessness of patient, and to induce sleep, and have wondering in fear and trepidation how far I might with safety rooth the patient into an artificial sleep or even coma.

Insomnia or delirium may call for hypnotic, e.g. opium, sulphonal, bromide, chloral. Of these opium is the most important, especially if patient's condition is accentuated by severe pain. The use of the class of drug demands the most careful nursing and experience. To render more insensate and invest the higher central nervous system with the administration of drug, a gentle circulation of unhealthy and poisoned blood, by the administration of stronger stimulants is to run a risk of making simultaneous and dangerous quiet, those vital cardiac and respiratory centres, and one which may be, and often are, more in need of stimulation than depression.

Hypnotics therefore must be carefully guarded by suitable stimulants; they must be used with an eye on the pulse and respiration; and search should be made for the cause of the delirium and the removed whenever possible. Above everything beware of chloral in all conditions, especially if fever. In treating insomnia general nursing practice must be observed, viz. quietness, darkened room, and avoidance of all fumes and exhibition of nervous aphasia, on the part of the nurse, which is so worrying and distressing to a nervous excited patient.
The relief of symptoms does not mean always
the amelioration of the patient's condition and the best treatment
of his disease. It may only prove, and often does, but a
delusion and a snare to the anxious medical man. I remember
Dr. Sutton of the London Hospital being asked
respecting indication for the use of opium in certain form
of heart disease, and the most active physician had to
confess that the matter was obscure & difficult, and
altogether beyond verbal conveyance.

The following case I think conveys a moral
and a suggestion. Our digitalis or chloral or whatever drug it
be fails in having the desired effect. Why? Perhaps the
forces are at work which must be suppressed before the curative
effect of the drug is allowed:

The patient was under my care for
rapidly spreading ulcerating ulceratini of the throat. In spite
of all ordinary local antiseptic treatment and large doses of
potassium iodide (31 c.c. a.) with mercury, the ulceratini not
stayed and relentless progress. I ultimately tried strong local
measures, freely brushing the ulcerated surfaces with strong
sulphate of copper lotion (5 cc. 20 ad 31) without-changing the
treatment. Beneficial results were seen in a few hours, and in
a week the ulcer were forming out our freely.

Therefore in the treatment of these condition
do not forget concomitant causal factor of synechia, pain,
dyspnoea from respiratory and cardiac embarrassment &c.
and treat accordingly with alcohol, digitalis, cold application
(synechia), morphia with or without poisons for relief of pleural
pain &c. Balfour's practice is, I believe, to give chloral almost
routine in pneumonia because it soothes pain and cough, prevents insomnia, and therfore helps to check nervous exhaustion. I have seen good results accrue from the exhibition of this drug in the treatment of nervous, excitable, worry ing patient who know little of resignation to pain and suffering and are in a chronic condition of revolt and nervous eruption.

In case of delayed resolution following attack of pneumonia I have known small doses of mercury to act like a charm when all remedies have proved useless.

Taking into consideration the possibility of myocardial degeneration in pneumonia, Dr. Fred. Roberts warns patient in convalescence against early or forcible exercise of any kind. I believe this to be sound advice, as on several occasions I have been compelled to order patients back to bed on account of symptoms suggestive of cardiac failure.

In conclusion I may add that I am in complete accord with Dr. Cushak when he writes respecting the treatment of pneumonia: "The lines on which it should proceed are these. First, observe the golden rule in medicine, viz,—Do nothing unless you see your way to doing good. This rule is more vital in pneumonia than in almost any other affection."
Pleurisy with effusion — diagnosis.

Pleural rub

In connection with pleural rub the following features must be borne in mind:

1. Seeing that it depends for its existence on the rubbing of pleural surfaces thickened by lymph deposit, it is evident that when movement is greatest the rub will be most evident. The three positions when its presence is most evident are (a) in the middle line (b) infra-axillary region (c) below angle of scapula.

It must be noted, however, that in pleurisy from any cause there is more or less reflex inspiratory inhibition, which results in diminished movement, so that in many cases it is difficult to elicit this sound, though it is reasonably believed that pleurisy exists.

2. Wherever pleurisy is, and condition for the pleural rub exist, there may the sound be heard, and in somewhat unusual places. Burney, Yeo has described cases of apical pleurisy, and I have seen one example in a lady of 60 where pleural rub was to be heard only below the clavicle.

3. In diaphragmatic pleurisy the rub may not be heard, and physical signs of pleurisy may therefore be absent, as is also the case in pneumonia in central part of lung surrounded by more or less healthy lung tissue.

4. If effusion is present the pleural surface are effected, and rub is not produced. On absorption of the fluid and contact of the pleural surfaces a rub rub affects, and the appearance of this rub in fact, or over the whole
surface of lung as occasionally happen, affords a good clinical sign of absorption of the fluid.

(5) Some of my cases of pleurisy have been in tuberculous subjects, and in these I have noted the harshness of the rub, which has sounded like crackling crepitation, indistinguishable from those heard in softening of lung. In such cases the rub is often distinctly felt, i.e., the character of directness & superficiality, is increased perhaps by pressure of stethoscope against chest-wall.

Occasionally in cases of marked dry pleurisy complicating acute pneumonia the pleural rub is very deceptive. I will quote extract from a "casualty report" of a patient who presented this sign—

"Pt. A. L., aged 20, admitted to hospital with physical signs on the left side of pneumonia with pleural inflammation & effusion. Marked dulness, tubular breathing, crepitation, and pleural rub were present. Posteriorly the dulness was most marked, tactile vocal fremitus, and vocal resonance absent. Breath sounds weak. Beneath the left scapilla the adventitious sounds, i.e., crackling-like constricting crepitation, resembled exactly those due to softening of lung; on this account a possible tubercular infection was suggested. This was supported by the history of the 20 days illness (? before admission into hospital and the purulent character of the sputum. Against this view, however, were the acute onset & progress; the typical pneumococcic & toxemic appearance of cyanosis, dyspnea, muttering delirium, rapid cardiac failure, and regularly high temperature; the absence of tubercle bacilli in the sputum; cavernous breathing in the chest; discharging thin circular pulmonary excavation and cavitating……..

P.M. — left lung was completely consolidated, lateral portion was thickly coated with string of pleural lymph exudation. There was also a quantity of turbid yellowish semi-purulent fluid in pleural cavity…….."
In pleural effusion the amount of fluid must be considered, and it is well to have in mind the physical condition which arise from presence of fluid in small or large amounts. As stated in Tagge (Vol. II, 2nd ed. 1888): "Dr. Roen long ago pointed out that the presence of even a few ounces of liquid in any part of the pleural cavity causes a total collapse of the pulmonary tissue which ought to occupy that space."

Until the whole lung is collapsed the fluid is held up by the elasticity of the undamaged portion, and the pressure is negative. It has been observed in this case that the lung retracts in a definite line—upwards and towards mediastinum from posterior part of diaphragm—so that between stomach in front and spine behind there exist confluent dulness, bounded above by a curve known as Allbutt's curve, which is least observed when (a) patient erect (b) normal underlying lung (c) moderate effusion (d) light percussion.

Obstruction of stomach resonance by this posterior dull triangle is of considerable diagnostic significance. As could only be expected with such physical condition, the heart and other organs are not displaced; the pressure of the fluid being exerted on collapse-subject lung instead of forcing a space by displacement of the organs adjoining. Samuel Gee states (Clifford Allbutt 1898 Vol. 5 p. 354) that one quart of fluid has been present without heart displacement, and I have been struck by the amount of fluid which I have found to be present by aspiration without showing its presence by alteration in the position of the heart impulse.

In large effusions the lung become totally
collapsed, and the pressure in consequence becomes positive, and is diffused along the ex-pulmonary lines of the enclosing cavity. It is in these cases that we get (1) increased size of chest as revealed by cystomati, and the bulging intercostal spaces, (2) deformed diaphragm with live stomach and spleen, (3) displaced heart, (4) dull semilunar space replacing normal stomach resonance (Truel's semilunar triangle), (5) the fluid running out of the thorax, (6) serious dyspnoea and irregular heart action.

With reference to the well-known physical signs of pleural effusion, though agreeing as to the value of diminished or absent tactile vocal fremitus, I have been struck by its persistence when the fluid has been in such amount as to lead one to expect from text-books teaching its entire absence.

In the relation the condition of the confined lung must be considered. One case of pleurisy with effusion following on acute pneumonia caused the most obvious physical signs. Neither vocal resonance nor tactile vocal fremitus was relatively diminished, although the excessive dead dulness with great resistance, and the displaced heart, with abnormal intensification, showed a large pleural effusion, which was subsequently verified.

The important signs of a large pleural effusion are: special dulness with great resistance, displacement of heart, intubation, loss of tactile vocal fremitus, dulness of Truel's semilunar triangle; and the fluid moderate in amount. Ellis' curved line of percussion dulness, which is highest in the axilla.

The conditions which may cause special difficulty that I have met with are:
(1) Massive Pneumonia, occurring in a soldier's right lung absolutely solid from base to apex (found post mortem) in which all the physical signs of pleurisy with effusion were present except displacement of heart which would certainly have been found had the dulness not been due to a pleural effusion.

The difficulty, as before indicated, in ascertaining and ascertaining the relative values of the mixed physical signs may be great in pleural pneumonia with marked physical signs.

(2) In cases of yellow Pneumonia with much thickened pleura it is universally admitted that the diagnosis can only be cleared up by exploration.

(3) Thickened pleura with adhesions left after an attack of dry pleurisy, with or without pneumonia, may closely simulate the presence of a small effusion. In connection with the matter it may be interesting to note the opinion held by Dr. Fred. Roberts of University College Hospital and Dr. Acland of St. Thomas' Hospital Bromley Rd. for Diseases of the Chest. On my describing to Dr. Acland the frequency with which Dr. Roberts diagnoses a thickened pleura, Dr. Acland replied that he was certain many cases of so-called thickened pleura would on exploration with a needle prove to be small localised collection of fluid.

This matter I consider of some practical value in treatment. Thickened pleura is beyond remedy, and is a standing scar of a past victorious battle. A local fluid collection however, represents a defeat of natural forces, and is a standing menace to the health of the compressed lung, and to the patient's constitution.

I remember diagnosing such a case with confidence.
confidence in the right side of the chest in a young soldier who subsequently developed pulmonary tuberculosis and died. Post mortem examination revealed the presence of fluid and subjacent collapsed, carniied lung, and I could not but blame myself for my failure to settle more certainly the diagnosis, with the possible benefit to the patient.

(4) In my experience of broncho pneumonia in children, a complicating collapse of lung has caused dulness to, with comparative absence of breath sound, which has been most suggestive of a concomitant pleural effusion, and I have often led to believe in a clinical aphorism which states that in these circumstances "the mischief is often greater when one hear the least noise."

(5) Dr. Leland has described to me a case of total collapse of lung simulating a pleural effusion which was needle accordingly, and which proved to be due to pressure of tuberculous fluid on the main bronchus.

(6) Dr. Dalton yerwick has described to me a peculiar case of basal bronchiectasis of large size which when filled with secretion prior to expectoration has simulated a pleural effusion. A return of resonance, resonant breath sound, etc., after emptying has solved the diagnosis.

(7) My experience of mediastinal growths simulating pleural effusion has not been great, but I have met with a case where (short from presence of primary or secondary growth, pneumonic symptom, cachexia) the peculiarity of dulness from left to right across sternum, and the enveloping of heart without displacement, have led to a correct diagnosis.
With regard to diagnosis from infra-diaphragm.

I have had two cases under my care of abscess of
line which has only been cleared up by needle. In one of
these cases the physical signs were complicated by the existence
of two abscesses, one occupying the right infra-axillary region
and giving rise to ordinary physical signs, the other situated
more posteriorly and causing external dulness by the thin
sheet exactly like that to be obtained in a basal pleural effusion.

Two operations were performed in this case within an interval
of a few weeks, one posterior and the other in the anterior
axillary line, and here was obtained with the recovery
of the patient.

I have found that these cases of abscess of
line are frequently complicated by a pleural effusion, which
subsides on the proper surgical treatment of the line abscess.

In such cases errors of diagnosis are checked by the
joint consideration of physical signs and symptoms in
chest in connection with those arising more directly from
affected organs. For it must be remembered that the mechanical
conditions causing collapse or lung which are responsible for
many of the distinctive features of a pleural effusion exist in
such cases; although in my experience of some dozen cases of
abscess of line the peculiar curved area of chest dulness reaching
its highest point about the axillary region is a feature of the
greatest diagnostic importance.

To avoid mistakes in diagnosis it is absolutely
necessary to take into account all causes, thoracic and abdominal,
of lung or heart displacement, and diagnostic errors can only be
prevented by a proper appreciation of anatomical and physiological
condition which may cause the physical sign observed.

In connection with this statement, it may be noted that
the heart may be pulled out of position as well as pushed. In
one case of large areas of hemorrhage affecting left lobe, the heart
was displaced upward and to the left, so that impulse could
be seen and felt about the nipple, and it was interesting
on operation in this case to feel the pulsation of the heart by the
finger introduced into the abscess cavity directly under the
diaphragm in this direction.

As contrasted with this, I have seen a case
in which the heart was pulled upward and to the right, so
that the pulsation was evident in the second and third right
intercostal spaces with dulness over upper part of atelectasis
and to the right; by a contracting cavity at the right apex
in a case of chronic phthisis.

In cases cardiac impulse cannot be seen or felt
position of heart may be ascertained by position of maximum
loudness of sounds with stethoscope. I have found this method
of considerable utility, such a procedure is necessary in cases
when the heart has been displaced to the right and the impulse
is concealed by lower end of atelectasis.

A peculiar condition which I have not found
noted is that in some of the cases of small pleural effusion
apparent without other abnormal pulmonary condition, the cardiac
impulse has been seen abnormally diffused but in the normal
position. I can only explain this by suggesting that in some
manner the general elasticity of the lung has been affected, by
the pleural effusion leading to a retraction or falling away of
lung resulted in exposed heart's condition seen at its best in
fibroid phthisis or pneumonia.
I would insist upon the necessity for a frequent use of the exploring needle in the diagnosis of pleural effusion, and upon the routine examination of the chest in all cases of sickness.

It is astonishing what amount of fluid can exist in the pleural cavity without causing undue distress. When in private practice I once saw a young farm labourer visit the surgery whose left pleural cavity was full of fluid and whose heart impulses was to be seen to the right of the sternum. The man had walked a distance of four miles from an adjoining village, and simply made the complaint that he was "feeling out of sorts." On subsequent inspection at the patient's home three or four quarts of fluid was removed. On more than one occasion soldiers have been admitted into my ward with one side of the chest more or less full of fluid, who have been attending to their duties up to reporting sick for this condition.

In discussing this class of case with Professor Dalton of King's College, London, he stated that he had reasons for believing that large pleural effusions may form within some 24 hours in course of a lethal dry pleurisy.

In connection with this matter it may be of interest to record two casual visits at a London hospital. When plying round with the house physician I was directed to a case of cirrhosis of liver with ascites. On making a routine auscultation of the chest in accordance with my usual custom I discovered a large pleural effusion on the right side which had been unsuspected. The patient was in bed, and had made no complaints to suggest the house physician anything in the nature of pulmonary complication. A few days later I accompanied the house surgeon
on his round, and was shown an interesting case of lymphedema.

Having in my mind partly enlarged mediastinal glands, I again made
an examination of the chest, and again discovered a large pleural
effusion which had escaped notice. In both these cases the
respective house physician and house surgeon at once aspirated
the effusion. Hence an excellent moral is conveyed by
such cases.

To diverge slightly from the subject in hand
I may record three examples of latent disease as it affects the
heart. Two of the cases were soldiers who had up to the point
of recent invading from South Africa been for a year through
the hardships of actual campaigning. Both of these men exhibit
well marked aortic and mitral valvular disease, and it was
almost incomprehensible that a heart so affected could be
capable of the necessary compensation under such extraordinary
mental and physical conditions.

Another case I saw was a farmer of 35-
who complained of shortness of breath in the midst of haytime.
Examination revealed extensive aortic disease evident in the
result of atheromatous degeneration of aortic valve etc., and a
heavily dilated and hypertrophied heart. This patient was dead
before the end of the year.

In discussing these cases with
Dr. Foster Ward of King's College Hospital, he informed
me of a case of acute cardiac failure evidently the result of
grave myocardial degeneration which ran its course in three
weeks.

This subject of latent disease as far as
its symptomatic manifestation are concerned, is a most
interesting one, and one that should appeal hopefully to the general practitioner.
Empyema

This subject being of absorbing and practical interest to the general practitioner demands special attention. Whether the effusion is acute (in inflammation or dropsy), pus or blood, the general physical signs are alike in being those of effusion into the pleural cavity. The special local sign of pus in the pleural cavity are vague and valueless. Borelli's sign of non-conduction of the whispered voice through pus is worthless, and the other local signs due to extension of inflammation through the chest-wall, viz. redness, edema, enlarged vein, bulging, should never be given an opportunity of arising.

The following points in the history are in favor of empyema:

1. Age - young, old.
2. Bad general health.
3. History of scarlet fever or other infection disease.
4. Pleural effusion following pneumonia after which have practically always been empyema.
5. General symptoms of septic poisoning - hectic temperature, sweating, diarrhoea, anaemia, anemia.
6. Chilling of fingers.
7. Some chronicity of duration.

In one of my cases, a young soldier of 20, who was originally admitted to hospital for pneumonia, the presence of empyema was first certainly evidenced by sudden eruption of a quantity of pus. Explorating with a needle discovered localized empyema, which was at once treated by incision and resection of rib with very excellent results.

This case, though a 'neglected incident', points a moral. The persistence of somewhat irregular temperature and fever, with the local sign of dulness, &c., certain suggests
a localized collection of pus. The skin was prepared overnight for exploration, but the instrument was found defective. It was whilst awaiting its return that the pus was expectorated. "Have put off till tomorrow," it was written. A special application in this class of cases when the dangers of delay are so extreme & peculiar.

I would draw attention to certain physical signs in children, particularly those which I have found valuable, and which should put the practitioner on the watch for the following:

1. Local or diffuse dull dulness. 2. Raucous, general, cough at one spot. 3. Symptoms of chronic lung trouble with absence of rales. 4. Bronchial breathing without rales - in fact, signs of closed bronchi with patent bronchi but without wet sounds - suggest a pleural effusion, and therefore in a child empyema.

But always if in doubt - explore. In a case of central pneumonia in a young boy of 14 convalescing from scarlet fever, the absence of subclavicular bronchial breaths without rales suggested to me compression of lung by a pleural effusion, and localized empyema was subsequently found on exploration with the needle, and successfully treated by incision and resection of a portion of the second rib.

Another patient I saw, under the care of a colleague, was a thin weekly boy aged 14. He was admitted with cough, pain in chest, and wasting, and developed in the course of two or three weeks an abscess in the thoracic wall in the right axillary region. This was opened, and from it escaped an ear of corn. Further exploration revealed a limited empyema, which was duly treated, ending after a long and distressing illness in complete recovery. The history of the case was
interesting. It was to the effect that some months previously
he had accidentally swallowed a piece of corn which he
described as having gone "the wrong way." Further detail I
cannot give from memory, but it was very evident that the
foreign body had entered a bronchus, and had by a process of
infection and suppuration worked its way externally via the
pleural cavity.

Occasionally the first sign of a septic focus
of the nature in the chest is evidenced by a secondary septic
condition like abscess of brain. It was my good fortune last-year
when visiting University College Hospital to see a P.M. on a case
of this nature in an elderly man who was admitted into
hospital suffering from a fit, and who died shortly after admission.
A record of another case at this juncture
may prove instructive. At X., aged 24, was transferred to my
ward from the adjoining lock hospital. On his transfer he was
the ward of the medical officer in charge of the case
"Patent" convalescent, transferred for more careful nursing.
The history of the case was brief - pneumonia of left-lung,
followed by empyema, which was treated with incision some
two months previous to transfer. After about three weeks, drainage
tube was removed and the wound allowed to heal. Although the
temperature remained irregularly raised, and the patient
condition was anything but satisfactory.

On admission into my ward the patient
said he had "been ill" but was "now getting better." He was
so short of breath that he could not lie in the recumbent position
and was markedly cyanosed. His heart was feeble, the impulse
could not be felt, though cardiac sounds normal, liver was enlarged.
ascites present; leg trophic - evidence of signs pointing to cardiac failure secondary to lung disease. The chest presented physical signs of extensive effusion into both pleural cavities. The temperature had been normal for some days; and this is interesting in view of the revelation of the post-mortem exam. afforded by the patient suddenly dying from cardiac failure the day but one after admission.

At the autopsy the state of organs was found left pleura full of pus, with lung contusion collapsed and congested; large acute effusion in right pleural cavity; pus in pericardium between masses of dense fibrous adherent; heart much flabby; marked dilatation of right ventricle; liver seeping. Yet the patient was considered by himself and by his medical officers to be convalescent; and the temperature had apparently arrived at the same conclusion in the few days interval before death. The diagnosis on it had been weeks previously relegated to the dust and ashes of the room.

And the reminder of a story which is further sufficient: a proverb to assure the depression. A certain medical man had caused the plumber for doing a bad piece of plumbing at his house, and asked the workman in tones of righteous indignation: "What would I deserve if I did my work as badly as that?" The stinging reply of the man was: "Ah, doctor, if I make a mistake in my work it is above ground and can be seen; if you make a mistake in yours - the rest of the sentence is painfully obvious. And yet I know of a country practitioner, a type of many I am afraid, who in his twenty-fifth year, much for gold he not found time to read a medical text book through, or to once visit
a hospital for clinical instruction of some sort during the whole of this period.

"Page" too, was impressed with the immense responsibilities of medical practice. He held it the bounden duty of medical men to make themselves as efficient as possible, and one of his favourite themes was the possibility—further, the necessity—of combining science with practice. - Review of 'Memoir & Letter of Sir Jos. Page', Lancet, Oct. 12, 1901, p. 983.
Emphysema - exploration.

The errors attendant on exploration as given by various authors are:

1. Thick-walled old emphysema. To prevent error from this cause I would not that once the needle has passed between the ribs, it should be thrust quickly and forcibly through any resisting medium, until the point is felt to have passed beyond this and to be free in a cavity, or otherwise.

2. Localized collection of pus obscure and deeply placed, for example between lobes of lung, or over some part of diaphragm.

3. Thick stringy pus obstructing needle. But pus is probably never so thick as not to betray its presence by the microscopic examination of the fluid of fluid blown from point of needle after removal. This examination should always be made in cases of doubt, and a large bore aspirating tube and cannula be tried in addition to the existing needle.

Dry tapping though disappointing is not necessarily convincing, for it may fail repeatedly and yet be finally successful. The surgeon must be a strong man. He must have confidence in his diagnosis and remedy recourse and judgment in the adoption of his method to prove the correctness of it. I have had some experience of these errors, not only in cases of emphysema but also in abscess of liver; for as I shall indicate at various points, these two suppuration affections have close surgical relationship.
Early in practice I was saved from making a
great mistake through the advice of an intelligent
practitioner who was acquainted with the form of miliary
source of pus. I had been attending a lady of 28 who had
developed pneumonia in the second week following her first
confinement. The pneumonia affected the right lung and was
of a febrile and chronic type attended by a very high 9-irregular
temperature.

After some six weeks duration, and at a second
consultation with one of the leading consultant-physicians
of Liverpool, the decided dulness over a certain area, together
with the duration of illness and the irregular temperature,
led me to suggest the advisability of exploring with a needle.
The consultant approving, a needle was inserted to the ordinary
depth and a copious flow of free pus was withdrawn. To the
surprise I must admit of the consultant, he at once showed the pus to the friends of the patient, and declared
the need for immediate operation.

On the following day with this object in view
I asked my friend, a senior local practitioner, to administer
the anaesthetic. Informed and enlightened by a recent
unsatisfactory experience, he asked me if I was certain that
the pus came from the pleural cavity and not from the
pneumonic lung, and advised that before proceeding to open
the pleural cavity I should make certain of the existence
of effusion. The patient being anaesthetised, the needle
was inserted through the site of the former puncture, but no
pus could be discovered. Several punctures were made in the
adjoining area, but not a drop of pus was withdrawn.
After several weeks' longer illness the case ended in perfect recovery without the pleural cavity being opened, and without expectoration of any pus, or sign or symptom suggesting of pleural or other abscess.

(5) Fluid passing through diaphragm into subphrenic abscess or abscess of liver. In abscess of liver the color of the pus may indicate its origin. In subphrenic abscess the discovery of pus would have the same practical importance as in empyema, and operative treatment would probably lead to a correction of any mistake as to origin of the pus.

A case I saw with Professor Dalton shows the intimate connection of subphrenic disease with the thoracic organs. During life the diagnosis was not considered. The exact physical sign present in the case—a young woman—now forgotten; but the presence of pneumonia, pleural effusion, heart's collapse of lung with up-lifting of stomach, was discussed in turn as being more or less unsatisfactory as a complete explanation of the patient's physical condition. P.M. revealed a gastric ulcer which had been entirely silent during life, ulceration of diaphragm, a secondary pleurisy with effusion, pneumothorax, and pneumonia. The resonant note resulting from pneumothorax had been supposed to be caused by the up-lofted stomach. Dr. Dalton believes he published this case in extenso.

In my second case of abscess of liver, I found aspirating astonishing through it was dealing with a right basal pleural effusion.

I would add just one note of warning here. In several of my twin cases of liver abscess, the pus lying superficially that was withdrawn either by aspiration or incision was of quite ordinary yellow colour, whereas the deeper pus was of a typical anchyrasec water. The explanation of this occurrence is, that the abscess in these cases reaches the surface of the liver, and the pus then for has its origin—liver and caudal (or even tissue beyond).
With aseptic precautions and some mechanical skill in introducing the needle the dangers of exploring or aspirating the chest are practically nil. This is one point about which from practical experience I should like to sound a word of warning—that is to be careful not to strike the needle against a rib in the act of insertion. In my earlier and more inexperienced days this happened to me, and on withdrawing the needle I found it bent, and the point dropped off on an attempt to straighten it. The danger of wounding an intercostal artery is kissen, and there is less likelihood of injuring rib. It is quite safe to aim boldly for the centre of an intercostal space.

The practical hints for exploration I have found useful may be summarised. (See Brit. med. J., p. 613).

1. Have patient at suitable height.
2. Have patient well supported, so that the guiding finger in the selected intercostal has a firm point d'appui.
3. In nervous and susceptible patients use chloroform or cocaine. General patient requiring the use of hypodermic needles.
4. Insert the finger firmly into the intercostal space, and use lower border of rib as guide to needle.
5. Have the arm well raised above the head, and insert needle during deep inspiration, and breath held.
6. When possible take at point of elevation when intercostal spaces are widest and least covered with muscle—that is below and in front of angle of scapula. When exploring, however, hit centre of flat percussion note by the guide.
When exploring use special needle—stiff, short (1/2—2 in.) with sloe, flat point, attached to exploring syringe with no fluid in it. Always close to make sure that instrument is effective.

(1) Use smaller tubing — less than, slower flow, smaller chance of suffocation. Palpate lung parenchyma; if used by running thread estate through needle to.

(2) Remove fluid slowly if aspirating.

(3) Stop if blood withdrawn, or if severe cough or pain in chest induced.

(4) Anticonvulsant precautions. The danger attending use of a septic needle are too well known to require more than mention. I know of one case when needle of a chest was followed by severe hemoptysis. The case was evidently one of fibrinous pneumonia, and the needle had no doubt entered a large blood vessel. I have seen a case also in which tapping pleural effusion was followed by pneumonia.

(5) Don't be afraid to insert deeply—safety a thick case may exist.

(6) Remember that the needle is the only means of establishing signs and symptoms into pericard cavities.

(7) Therefore, needle work and needle often is a splendid clinical golden rule in every affection of the chest.

(8) Bear in mind the possible errors previous diagnosis.

(9) If there is reason to suspect presence of pus and one needle is without result, let the old saw be our guide: 'If at first you don't succeed try again.'

—Whitney (20th Century Practitioner of Medicine)

"Even puncture may fail. I have within the past month operated upon a case of empyema — I made six exploratory punctures on the flat area with negative result. It was only when the patient was in extremis that a new zone of flatness appeared just above the line in front, and a seventh puncture gave exit to pus. Resection and drainages are now resulting in speedy recovery."
Enzyme operation.

In considering the operation for enzymes one cannot help being struck by its contrariety. Usuage as a surgical procedure. Odd that surgeons have been afraid to attack pus so deeply situated and in such close contact with vital organs like lungs and heart, and have exaggerated the consequence of opening a pleural cavity. The indicaion of letting out pus wherever found, if at all practicell, is as powerful here as it is elsewhere; and even more so, for the pleural cavity being a serous membrane is exceptionally abundant of organisms and toxins found in abscess cavities, and the lung compression and secondary disease affect the heart and general health so severely.

I remeber well the dread I experienced in operating upon my first case of empyema, but later experience has taught me to view an empyema as nothing but a collection of matter in an ordinary abscess cavity to be treated on ordinary surgical principle of free opening and drainage with antiseptic precautions. I experienced the same dread when brought into contact with my first case of abscess of liver when I became associated with work in a military hospital.

The very name of liver abscess suggested difficulty and dire complication which were sufficient to frighten the most intrepid but then fear all evaporated after my first case, and I found that a collection of matter in an organ like the liver was no more difficult to treat than an abscess on lung or on beneath the skin.

By way of describing in more detail certain practical points in connection with the operation for
everyone is the difficulty which I found to exist in seeking guidance in my earlier days of practice when brought face to face with the treatment of this class of cases. Even in special books on the subject, little practical points are omitted which might easily have found a place. It is to be regretted that in text books for the guidance of the student and the practitioner so little practical aid is afforded on such an important question.
The following summary represents many practical hints, and although many of the suggestions are not original, important facts and opinions are often neglected. The importance of adhesions is often overlooked.

1. Always localize the site by preliminary function over the area described by the patient. YES, Manual of Medical Treatment, 5th Ed., p. 679. Exploration function had yielded few, but on excavation of the site in front of the site of function, no pus was found. Removal of a flesh piece of rib immediately over mark of exploration gave exit to pus. The possibility for localizable fluid collection is never overlooked.

2. Never omit to resect rib. I am a strong advocate of this procedure, for it advantages are practically nil. Its advantages are many:

(a) It allows the finger to be introduced to explore area of lung—amount of collapse or recession, the presence of adhesions, and the possibility of early and complete extension can thereby be judged, and the opportunity is afforded of breaking down the adhesions when recent, and of reaching out the large fibrous masses which are often present. One can never know apart from such exploration whether such masses exist or not; and if they do exist, it is of the greatest importance to clear them away, for they serve to prevent free drainage. By blocking the tube, and afford excellent home and exhilaration for septi gaseous growth in the process of desalinization and discharge after operation.

(b) After rib resection, large tube can be inserted, and the mean free drainage and its liability to retention of discharge. So improved am I by the necessity,
for a large drainage tube in the class of cases that I
invariably use the thickest and largest hole rubber tube
which I first saw adopted by Sir Fred. Treves in a case of lung
abcess some years ago. Such tubes are manufactured and

(2) Removal of portion of rib prevents
that nipping of the tube during subsequent contraction of
chest wall in the course of convalescence which might again
interfere with tube drainage. Steel needle or forceps is used.

(3) The surgeon must decide before commencing to
operate whether simple incision or an incision plus resection
is to be performed. If incision only, the cut is made in the
mid-intercostal space; if resection, our centre of rib, and the
bone is removed before the pleural cavity is opened.

(4) Another point, which is brought out well by
Godley & Kingston Fowler, is not to raise the arm above the
head, otherwise the tissues are drawn up, and an oblique
valvular opening is made into the chest which lessens the
freedom of drainage and ease of re-introduction of tube
after daily removal for cleansing, and favours the formation
of a fistulous passage which may not be easy to close.

(5) I would suggest also rapidity in performing
operation. The first incision should be carried boldly down
to the rib. A little blunt director aided by retraction soon
loosens the peristomeum for sufficient for the rapid completion
of the second step of resection. The third step of opening
the pleural cavity is best and safest performed by
Hilton's method, viz. by thrusting director into pleural cavity
and subsequent dilatation with dressing forceps and finger.
A word of warning may be given at this stage. Thorough handling may result in tearing across the detached peritoneum and tautness of intestinal entry with consequent haemorrhage. I have not seen this accident recorded, but I have thought that the explanation of the haemorrhage following operation may be frequent put down to this cause, and treated accordingly.

(b) The drainage tube, as before stated, must be the stiffer and widest, just long enough to enter cavity, with no side openings except perhaps at tip, efficiently protected by a large safety pin from escaping into cavity, and wound protuded from safety pin by piece of protection or gauge - an additional safeguard against slipping of tube into pleural cavity.

It is stated that the tube should be unmoved if patent for several days to cause a track to be formed which will render ease its reininsertion. This in my opinion is somewhat dangerous advice, for how can the surgeon tell that the tube is blocked exactly by indication of constitutional disturbance (again of infection) which is the very thing we wish to avoid. Of course sudden stoppage of a large discharge will suggest that drainage is imperfect, but one can never be certain that the tube is at fault without examination, especially after the first 48 hours.

My practice is to remove the tube daily and to thoroughly clean it, and this is specially indicated when large fibrin masses are found at the time of operation. In the last case of any pyo I operated on, these masses were present in great quantity, and for the first few days I found the tube blocked each time it was removed.
It is necessary to be very cautious in removing a
tube, and it requires considerable experience to judge when
the tube can be omitted with safety to the patient. Watson
Cheyne in his book on ulcer describes cases where he has
depressed the tube after 24 hours, but even in the
most favorable cases such a practice must be fraught
with danger to the patient. Little harm results from
allowing the tube to remain in for two or three days longer
than might be strictly required but considerable harm may
result and convalescence be delayed with additional suffering
and annoyance to the patient and the medical attendant. By
removal of the tube before the necessity for drainage from
the pleural cavity has ceased to exist. In earlier days, in
my anxiety to make a speedy cure of my patient, I then had
reason to regret my premature action, and then had to give
a whiff of chloroform to dilate the wound and reinsert the
tube on account of recollection of its

The usual guiding signs for removal of tube are
(a) Discharge sweet, serous, and acrid.
(b) Absence of cavities on examination
with finger as a probe.
(c) Normal temperature.

Here again I would not that one of the benefits derived
from the use of a large tube is that it allows the index
finger to be used as a probe, and therefore permits the
surgeon to grasp the internal condition of existing cavities
(or not) with greater precision. It is my practice to use
my finger as a probe in these cases, and not to replace
my large tube by a smaller one as so frequently done.
If there still remains a cavity that cavity must be drained, and a large tube is the most efficient means of draining it; therefore why replace it by a smaller tube, for the size of the external wound is immaterial so it shrinks up even too rapidly when the tube is removed. If there is no cavity there is no need to drain, and I have found in practice that there is practically no danger of the sinus failing to heal from the bottom if each day or dressing the case care is taken by the passage of a directed and occasional dilatation if necessary by means of a tube sinus forceps, to see that no fur re-collects. As the above cavity contracts the tube must be gradually shortened, until finally it can be omitted altogether.

(7) With regard to the dressing, it is recommended to put a piece of protection over the mouth of the tube as a flap valve which tends to prevent air entrance and admixture of septic germs; and no dry fluffy dressing must be allowed next the wound, else particles are liable to enter chest, thereby causing irritation. It is necessary to prevent as far as possible air from entering the chest and causing semi-collapse of the lung. This is best done by use of the safety flap valve, and an abundance of good dressings, which also serve to filter air of septic germs.

(8) The after treatment is of importance. It must be remembered that the case is cured by the obliteration of the sinus containing sac, and this is effected by the falling truth of its walls, viz. uplifting of diaphragm re-expansion of lung sinking in of ribs. Any measure which assists then act will facilitate obliteration of the sac. With this aim in view it is important to get the patient up as soon as he is physically fit, and to put him through exercises which are
in the nature of practice in respiration—walking, swinging from horizontal bank, the use of dumb-bells, blowing water through Wulff's bottle, etc., all of which exercises tend to expand the lung and to assure freedom of diaphragmatic movement. If these exercises are performed in the open air and under the healing influence of sunshine so much better for the general health of the patient.

A consideration of their means of recovery points strongly to the importance of the early recognition of empyema and its immediate surgical treatment, so that the lung is not permanently damaged or bound down, thereby rendering its re-expansion impossible if not impossible, and the patient's health so injured that physical movement of any nature are unfeasible.

And attention to the general health after empyema must be given, for the value of respiration and other movement in closing the case is proportionate to the strength and the frequency of practice, and their beneficence is but secured by abundance of food-nourishing food, and such tonics as Lactoin syrup.

The following case under the care of a

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A long 1 inch drainage tube was inserted. Subsequent dressing of
the case being left to the nursing sister. A few days after
operation, or the inability to reinset the tube the surgeon ordered
a smaller tube to be substituted. The patient's state is at present
very unsatisfactory, and it is probable that the case will have
a fatal termination if the canons of surgical drainage continue
to be followed.

Then occurred two fatal cases only of abscess
of liver. The first case was one in which aspiration alone was
performed; the medical officer responsible for the treatment of
the patient being unwilling for more radical operation proceed
to be adopted. The patient after much of suffering excreted
considerable amounts of liver pus, developed pneumonia, and died.
The second fatal case was treated by
simple incision and ordinary drainage tube. Nothing more
was done, and the patient died from imperfect drainage of
his abscess.

Of the special character of empyema resulting
from and thereby complicated by cavity in lung, contacting
bronchial gland, diseased rib and skin, I know nothing; nor
have I been troubled with the discharge becoming septic through
communicating with bronchi or oesophage, imperfect dressing,
or other means of septic contamination. The constant use of my
fingers as a probe during convalescence has however enabled me
to detect locali which might otherwise have become shut off, or
developed into a repository of septic pus. Such septic cases require
irrigation. I have found it my satisfaction that irrigation is totally unnecessary
in ordinary abscesses, wherever situated, and is as a general rule most harmful
than beneficial.