

THE TREATMENT
OF
ACUTE PNEUMONIA.

BY
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"The lyfe. so short, the craft so long to lerne,
Th' essay so hard, so sharp the conquering."

Chaucer.



This thesis is for the most part a compilation. It is impossible for a junior practitioner to treat with any approach to justice so important a subject in any other way.

To write a reliable monograph on a matter so difficult would require the authority of long experience and exceptional opportunities of observation.

I have, however, incorporated with it such fruit of my own observation as seemed worthy of record.

Sturges & Campbell written scores of times
Sturges & C.

THE TREATMENT OFPNEUMONIA.CHOICE OF SUBJECT.

I have chosen this subject because pneumonia is an acute dangerous disease, often attacking vigorous and healthy people, a constant source of anxiety to the physician, and one that I believe to be benefited by treatment. Judicious management will save many lives, which if left to nature's rough methods would be lost.

Commenting on prognosis in Pneumonia, Sir
Douglas Powell summarises his remarks as follows:-

Diseases of the Lungs

Powell. Page 240

(1). That pneumonia will claim a certain proportion of victims, all our efforts to the contrary notwithstanding.

(2). That above this small percentage of fatal cases there is a highly fluctuating margin, in which elevation and depression of the death rate is greatly dependant upon treatment.

In common with other diseases pneumonia has shared in the reaction from the excessive use of drugs in the past, and this with the evident failure of the abortive method of treatment has led the professional mind to distrust all methods. As a further cause of this mental attitude is the growing opinion that all cases of pneumonia will ultimately be demonstrated to be zymotic in origin.

INFECTIOUS PNEUMONIA.

Leyden and others early claimed that the disease should be placed amongst the zymotics. In 1877 Dr Austin Flint maintained that the pulmonary lesion in acute pneumonia is as much the manifestation of an infectious febrile disease as the affections of the solitary and agminated glands of the intestines are the anatomical characteristics of typhoid fever. It may practically be regarded as settled that there are outbreaks of pneumonia which are infectious. Many examples of such outbreaks are given by the Collective Investigation Committee, some of them apparently most conclusive. One of the first of such outbreaks to be chronicled was at Middlesboro' in 1889

*Transactions
of New-York
Medical Society*

1877.

*The Collective
Investigation
Committee. Vol. I.*

and was investigated by Dr Ballard, and described by him in the report of the Medical Officer of Health to the Local Government Board in 1889. Dr Murphy, who was on the spot and able personally to follow the investigation of Dr Ballard, although satisfied that the cases closely resembled those of ordinary pneumonia, yet admitted that there were some differences which, although slight, were constant. This epidemic affected 1633 persons out of a population of 97,606 and caused 369 deaths, or a mortality of 16.7%.

The further question whether all cases of pneumonia are infectious is still sub-judice, the opinion of the profession being that while there are some cases of pneumonia which are infectious yet many others and probably the greater number are non-infectious.

The Collective Investigation Committee (Brit. Med. Assoc.) investigated the returns of 1065 cases, and at the close of their labours offered the following as a definition which comprehended the several forms of pneumonia which had to be recognised and found, illustrated in their report.

*Report of the out-
-break of Infectious
Pneumonia at
Middlesbrough in 1889
Treatise on Hygiene
& Public Health
by Stevenson & Murphy
page. 127. —*

- (1). "Of pneumonia as a local affection there are examples in plenty, especially in early life. Its onset is sudden and due to some notable chill or exposure of the body. It has all the characters of acute inflammation with a marked tendency to spontaneous cure and is largely dependant upon certain meteorological conditions which are productive also of other forms of inflammation.
- (2). Distinguished from these are cases of secondary pneumonia, such as arise in the course of many acute and specific affections.
- (3). In addition to these two well recognised forms of the disease, clinical observation, we think, bids us recognise a third variety - a pneumonia due to causes not directly injurious to the lung but operating through the blood or nervous system. It is properly a secondary pneumonia, for it is but the signal and expression of anterior vital changes yet owing to the absence (or apparent absence) of any other organic lesion it is not so accounted. Although anatomically indistinguishable (as far as we know at present) it deserves separate recognition in virtue as well of its distinctive origin as

of the fact that it has a variable rate of mortality and a gravity which is not commensurate with the extent of lung involved."

THE DIPLOCOCCUS OF PNEUMONIA.

The exact causal relation between the diplococcus pneumoniae and croupous pneumonia has not yet been worked out, and Dr Klein states that even in typical cases of croupous pneumonia of man the micrococcus may be absent, or may be only very scarce even between the third and ninth day, and that the typical sputum of croupous pneumonia does not in many cases produce disease in animals on inoculation.

The pneumococcus is present more frequently than any other organism, but 20% of healthy people are said to have it in their buccal secretion and apparently it will produce with equal impartiality, pneumonia, meningitis, or pleurisy. "There are three favoured candidates for the honour of disseminating pneumonia amongst us, namely Friedlander's bacillus pneumoniae, Fraenkel's pneumococcus, and Klein's bacillus pneumoniae. Of these the organism which is at present in

Microorganisms

7 disease.—

B. Klein M.D. page 4.

Discussion on

Acute-Pneumonia

Meeting of the

Brit. Med. Assocn

1895.

Prof. D. Powell.

most favour, having been found in the greatest number of cases of the disease is Fraenkel's pneumococcus."

PNEUMOTOXIN & ANTIPNEUMOTOXIN.

Drs G. & F. Klemperer of Munich have obtained filtered ^{cultures} ~~celluloses~~ of the pneumococcus, injected into the subcutaneous tissues or veins of an animal and the animal has been rendered immune for this disease. Further they have artificially produced pneumonia in an animal and then cured the disease by injecting into it the serum of another animal which had been rendered immune. Within 24 hours of such injection the temperature had fallen from 104°F. and 105°F. to normal. They believe that the pneumococcus produces a poisonous albumose - pneumotoxin - which passes into the circulation and causes the high temperature and indirectly all the constitutional disturbance. The pneumotoxin is diffused throughout the body by means of the circulation and there is then produced another substance - antipneumotoxin - which neutralises the action of the other albumose. In man there is said to be a constant absorption of the

Berlin

Klin. Wochenschrift

Aug. 24 & 31. 1891

obtained some very satisfactory results. He also suggests making the patient walk between parallel bars to reinstruct him as it were to keep his balance. At the same time he points out that it is useless to expect too much from any mechanical method of treatment, and that cases of slow evolution, very marked sensory derangement, and arthropathic complications are least likely to give any results.

(244) Serumtherapy in Pneumonia.

DE RENZI (*Rif. Med.*, February 24th-25th, 1896) found that in a comparatively small number of cases the mortality in apical pneumonia was 40 per cent., whilst that of basic pneumonia was only 5 per cent. This marked difference is believed by the author to be due chiefly to the fact that the apex of the lung is in such close proximity to important nerves. During the past year the author has treated 10 cases of pneumonia with antipneumonic serum prepared in the following manner. The animals are inoculated with a minimum non-lethal quantity of pneumonic virus, the dose of which is gradually increased until a strong immunity is produced. From these immune animals the serum is taken, and injected into the patient. Only severe cases were selected for treatment. In every case (that is, in 10) cure was obtained; in one case the temperature came down on the third day, although there were the signs of diffuse hepatisation of the lung. Of 5 other cases admitted during the year, and not treated by serum, 1 died. Although the author admits that his cases might have recovered without the serum treatment, he considers his results decidedly encouraging, as pointing towards a real and effective treatment of pneumonia.

(245) Schleich's Infiltration Anæsthesia.

SCHLEICH (*Therap. Monats.*, No. 9, 1895) uses three solutions of cocaine, morphine and chloride of sodium, the strongest for inflamed tissues, the medium or normal for moderately hyperæsthetic parts, and the weakest for extensive fields of operation; the medium solution suffices for nearly all cases. If codeine be substituted for morphine, less cocaine may be used, and the maximum dose is not reached so soon. When possible, the whole field of operation to its deepest layers should be infiltrated before any incision is made into the skin. The preliminary use of the ether spray at the point where the needle is to enter for the first injection was generally, and of late systematically, omitted at Tübingen; when the patients were assured that only the first prick would cause any pain, they made little objection; indeed, the prick of a sharp needle is hardly more painful than the start of congelation. The solutions must be aseptic, water is boiled in a suitable vessel, emptied to 50 c.cm., and a powder previously compounded of the various ingredients is added; the vessel is covered with several layers of sterile gauze and left to cool, or—for coldness of the solution is most important—

cooled artificially. Hofmeister (*Brun's Beiträge*, Bd. xv) found the amount required to be, for ligature of the vena saphena, 15 to 20 c.cm.; for excision of the matrix of the great toenail, 10 c.cm.; the amputation of the forearm took 50 c.cm. of the medium solution (containing cocaini mur. 0.2, morphini mur. 0.05, natrii chlor. 0.4, aquæ d. 200.0). Schleich has employed this method in more than 3,000 cases; he operated before the Twenty-third Congress of German Surgeons, 1894, in the clinic of v. Bergmann, who reported favourably upon it; v. Hacker had recommended it at Vienna in the previous year. Hofmeister admits that for short superficial operations the ether spray is simpler and more suitable, but holds that where one must go deeper, and have an exact view, or when the operation is a long one, infiltration is to be preferred, and is destined to replace general anæsthesia, not only in minor surgery, but to some extent in major operations.

(246) Serum Treatment of Scarlet Fever.

MARMOREK (*Journ. de Méd.*, March 10th, 1896) gives the results of some interesting observations. Notwithstanding that we do not yet know the specific organism which is the cause of scarlet fever, the frequent presence of a streptococcus may be of some value. It is found in the throat and in the glands, kidneys, ear discharge, valvular vegetations, etc. On these grounds, Marmorek injected anti-streptococcus serum in 96 cases of scarlet fever at the Trousseau Hospital. Of these, five died—four from diphtheria, and one from pneumonia. The most marked effect of the serum was on the swollen glands, which subsided so rapidly that there was no suppuration in a single case. In the event of albuminuria, one or two injections caused its disappearance. Not only did the serum seem to prevent grave complications, but it also caused the rapid disappearance of false membrane from the throat and the subsidence of delirium. The general state rapidly became better, the pulse slower and stronger. The only bad effects observed were transient erythemas. The writer, while admitting that the series is too small to warrant any definite conclusion, is still of opinion that the serum treatment was of considerable use in reducing the severity of the attack.

(247) Hypodermic Injections of Sublimate in Lupus.

SURDI (*Rif. Medica*, February 22nd, 1896) reports the case of a man, aged 60, who had suffered from labio-nasal lupus for twelve months, which did not respond to ordinary local treatment. On November 30th two hypodermic injections of a $\frac{1}{2}$ per cent. solution of sublimate were given in the neighbourhood of the ulceration. There was no reaction either general or local. December 3rd: Injections repeated; this was followed by slight swelling and redness of neighbouring tissues, lasting two days. On December 11th two injections of a 1 per cent. solution were given, causing

pneumotoxin from the lungs into the general circulation, which being diffused throughout the body causes all the phenomena of the disease, until the anti-pneumotoxin is produced in sufficient quantity to neutralize its action and so precipitate the crisis. They have demonstrated that the serum of the blood of patients after the crisis in pneumonia contained the antipneumotoxin, and was capable in a fair number of cases of curing the disease when injected into infected animals. They even tried it on the human subject and with promising results, the temperature falling after the injection, either temporarily or permanently. From 4 to 6 c.c of blood serum was injected. But in all these experiments with a self-limited disease like pneumonia it must be a difficult matter to decide whether the abatement of the symptoms is due to the injection of the blister-serum of one who has just gone through an attack or to the natural termination of the case.

THE ABORTIVE METHOD OF TREATMENT.

The abortive method of treating pneumonia

is now generally discredited. At the 1892 meeting of the Brit. Med. Assoc., when the matter was under discussion, Dr Goodhart was the only member who spoke in its favour. He was of opinion "that on the whole there seemed no doubt from a careful and even judicious scrutiny of the effects of treatment, and of the records of earlier times, and even occasionally now of the effects of bleeding in adults that pneumonia did abort, and possibly frequently too."

Brit. Med. Journal

April 5. 1895.

IODIDE OF POTASSIUM TREATMENT

Occasionally in medical literature some specific is mentioned; and at one time large doses of iodide of potassium are claimed to possess this power. The writer - Vallin of Sandau - states that large doses of iodide of potassium - at least 6 grams. (about 90 grs.) administered in the first six or seven hours following the initial rigor, brings about rapidly, often in twelve hours, a crisis by lysis of the fever. By precipitating the crisis at an earlier period of the disease he considers that the danger of collapse, which usually occurs from the sixth to the eighth day is much lessened.

Sernain Medical.

29 Mars. 1893.

DIGITALIS IN LARGE DOSES AS A SPECIFIC.

At another time large doses of digitalis is the specific and moreover a series of successful cases is given. In pneumonia and delirium-tremens it has been and still is by some considered good treatment to give digitalis in large doses at frequent intervals throughout the disease. In the Lancet of March 9/95 a case of pneumonia is given which was treated with 3ii of the infusion of digitalis every two hours. The writer Dr Glynn claiming that this is a most valuable remedy in pneumonia and would produce sleep and quiet when other drugs had failed. He admitted, however, that cases so treated were liable to collapse.

Messrs Sturges and Coupland in their book say if digitalis is used freely in a case there is apt to be an alarming collapse as soon as the crisis is reached.

"The feeble and irregular pulse accompanying a pneumonic crisis when digitalis has been freely employed is not an indication of cardiac debility, but of digitalis poisoning such as might happen under

*Medicinskoe**Obzrenii.**Nov. 15716. 1892.**Sturges & Coupland**on pneumonia.**Page 37.**Discussion on**Acute Pneumonia**Brit. Med. Assocn.**meeting. 1895.**Geo. W. Balfour.**M.D.*

any circumstances where digitalis has been equally freely employed."

Other writers speaking of the collapse which occurs in pneumonia and delirium-tremens advise the use of digitalis in large doses. In a very severe attack of delirium-tremens, the last of a series of three, feeling that the patient was in a hopeless condition as a last resource I have given tincture of digitalis in M40 doses every second hour until 3ii has been taken. There seemed to be some temporary improvement, the patient was quieter but the case ended fatally as was to be expected under any circumstances. The first dose was administered at about 8.30 p.m. and death occurred at 7.30. the following morning.

THE CHLORIDE OF CALCIUM TREATMENT.

In the Practitioner for April 1893 appeared a remarkable paper; read in the first instance by Dr A. Crombie before the Calcutta Medical Society. An entirely new method of treatment is advocated and one drug only is relied upon viz. chloride of calcium

in grs X to grs XV every four hours for an adult.

In most of the author's cases after they had been placed on this treatment no antipyretic was given and no mention is made of the administration of alcohol.

Dr Crombie was induced to try the chloride of calcium in this disease by success in the treatment of hot weather boils and the work of the brothers Klemperer upon the pathology of pneumonia and that of Pekel-haring upon coagulation of the blood-plasma and the salts of calcium. Upon the works of these observers the following considerations were based.

(1). Peptones have a very strong affinity for the calcium salts, which are essential for a continuation of nearly all the vital processes. They at the same time lower the ^{blood} pressure, decrease the coagulability of the blood, and if the dose is large enough will kill. All these symptoms are prevented if into the vessels of the animal which has had the peptone injected into its veins, a small quantity of the Chloride of Calcium is also injected.

(2). Peptonuria is a constant phenomenon of pneum-

onia.

(3). Possibly the pneumotoxin of the recent pathology is a peptone and if so can be curtailed in its action by the calcium salt in the same way. In all twenty-two cases were treated with a death rate of five per cent, the average favourable death rate being about twenty per cent.

There were some remarkable features in this series.-

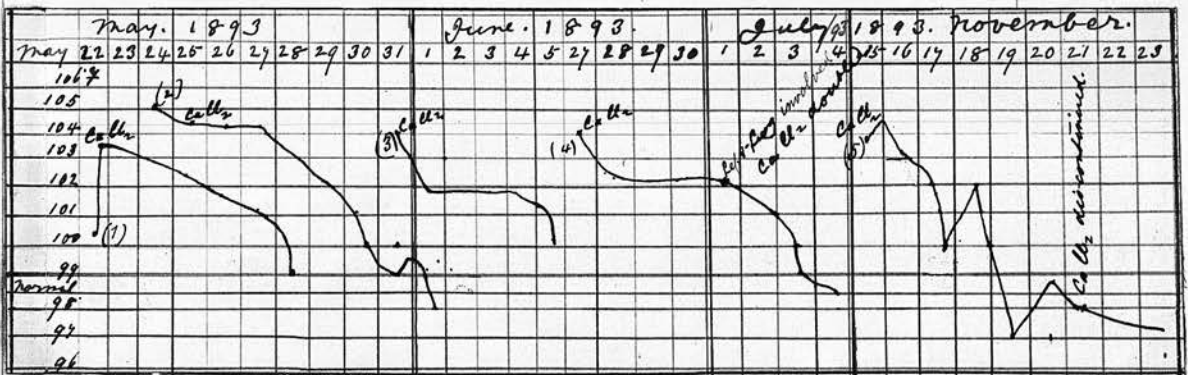
(1). After two or three days of treatment the fever subsided to a practically normal level, but as yet the physical signs persisted.

(2). At whatever stage the disease happened to be when the chloride of calcium was exhibited, at that stage it remained. If the first stage, the physical signs of the first stage persisted to the end, the crepitation and dulness gradually disappearing together. If this treatment began in the stage of tubular breathing this became less and less as the dulness cleared up, and there was no crepitatio redux.

It should be carefully noted that these remarks apply only to cases of croupous pneumonia;

in the few cases of lobular pneumonia which Dr Crombie similarly treated no benefit was obtained.

Appended is a temperature chart of the four first cases of Dr Crombie and a chart of a case of Mr Couldrey who was encouraged to try this method after reading the article.



Temperature Chart.

Of Cases of Pneumonia Treated by the Administration of

Chloride of Calcium.

The position of Ca Cl_2 (Chloride of Calcium) indicates that at that date the drug was administered.

Case 1. A mild case, grs IV of the salt was given every four hours on May 26. On the fourth, fifth, and sixth days of the disease, with the affected portion of the lung consolidated and the breathing tubular the temperatures were 102.2°F, 101.6°F and 101°F respectively. As the patient got better the percussion note became clearer and the breathing less and less tubular until it became normal.

Case 2. A case of acute sthenic lobar pneumonia of the right base. All distress relieved and practically normal temperature obtained after four days treatment.

Case 3. Pneumonia of both bases in a child of two years. Recovery excellent.

Case 4. Patient a healthy adult of twenty-five. Pneumonia of right base on admission. On the fifth day (July 1.) the upper half of the left lung became affected and the dose of the salt was doubled in consequence. The patient made a good recovery.

Case 5. Mr Couldrey's case was published in the Brit. Med. Journal of Dec. 3/93. The left base was affected, headache severe, and intolerance of light, pulse 120 on the first three days, 112 on the fourth, 80 on the fifth. The salt was given on the second and third day and the case did well.

Whether the pneumotoxin of the Berlin pathologists is a peptone is not yet proved, and consequently the explanation of the mode of action of the chloride of calcium offered by Dr Crombie is only problematical. This is practically admitted, and at the end of the article the author points to

the established fact that the presence of calcium chloride is necessary to the existence of the fibrin ferment and thinks its action may be due to some intimate effect upon the blood vitality.

The case of Mr Couldrey of which the temperature chart has been given is not the only one so treated by him . He writes of two specially severe cases in which under the old treatment a fatal result might have been expected, but which made good recoveries.

THE HISTORY OF THE TREATMENT OF PNEUMONIA.

I do not propose to enter into the history of the treatment of this condition in the past, believing that no good would result from so doing. It had no sound basis of ascertained pathological and clinical facts, was consequently empirical, and presented in common with many things medical before the microscope, stethoscope, and other instruments came to the physicians' aid, a sad spectacle of the blind leading the blind with the usual consequences.

THE STATISTICS OF THE DIFFERENT METHODS OF TREATMENT.

The statistics of the different methods of treatment are not to be relied upon, or at best should not be accepted without the closest scrutiny. It is difficult to compare results when the conditions of time, place, age of patient, and severity of the attack are not the same. In their book on pneumonia Messrs. Sturge & Coupland conclude the chapter on the history of the various methods of treatment with the words.-"In the foregoing review of the history of pneumonia in the past the reader can not fail to be impressed with the fact that amid much difference of opinion the final issue depends far less upon the particular method of treatment, than upon the source from which it comes. The statistics derived from particular schools illustrating the practice of some individual who himself expounded it are always the best. Those that laborious compilers construct for themselves, regardless of persons or theories are always the worst. There is no other rule that works. Boullard's industrious bleeding is almost as successful as the do nothing of homeopathy, and both methods

are excelled by the nutrient method of Dr Bennet, while on the other hand the mortality of the great European Hospitals and of eminent physicians pledged to no system and entering into no competition, is as a rule the largest, or if favourable in one year is disappointing in the next."

The treatment of pneumonia practically amounts to the treatment of its symptoms; the disease has a definite course, and all our efforts must be directed to keep the patient clear from the different obstacles in the path of the malady. The temperature must be controlled, the heart carefully watched, and if, as is likely, it should flag helped in its work, sleep must be obtained, and as a necessary condition of this, pain must be relieved. The sick room should be large and airy, the air slightly moistened and of a temperature about 60°F. Efficient nursing and feeding must be insisted upon and in private practice, wherever possible, a trained nurse should be obtained at the onset of the illness. It is needless to add that as soon as the diagnosis is made, or even probable the patient should be ordered to bed.

DIET IN PNEUMONIA.

The diet must be liquid,- beef-tea, mutton and chicken broth, milk which may be flavoured with tea, coffee, cocoa, or diluted with soda-water. Food should be given in this liquid form every two hours and only in moderate quantities. In many instances the anxiety of relatives leads them to overfeed the patient. The stomach is distended with large quantities of liquids and mechanically impedes the action of the already embarr^rassed heart. As soon as the patient can bear it the beef tea or other meat extract may be thickened with grated toast or biscuit, or Benger's food and peptonized milk may be given. Some patients can not take milk and in practically all cases of respiratory disease where there is much catarrh, complaint is made that it makes the chest "stuffier" and the phlegm more difficult to expectorate.

MEAT EXTRACTS.

The question of the value of meat extracts and essences, e.g. Brand's essence of beef, Valentines meat juice, Liebⁱg's extract of beef is still undecid-

ed and these various preparations do not yet occupy an assured position.

Dr Burney Yeo writes " Probably no greater dietetic error has ever been so tenaciously adhered to as that of prescribing strong animal extracts and broths for all kinds of invalids, and the immense number of preparations of this kind that is still being introduced to the notice of the profession and the public seem to indicate that there is no disposition to relinquish their employment. It should be remembered that most of these preparations have little food value, and that their mode of preparation insures the extraction of any toxins that may be contained in the meat. We have often seen the pulse rise ten to twenty beats and the arterial tension increase considerably, together with the appearance of much digestive discomfort after the patient has partaken freely of some of these meat extracts."

The analysis of these meat extracts as given in "Food and Sanitation" are of great interest, but do not serve to increase the estimation in which these preparations are held.

*Manual of
Medical Treatment.
Vol. II. Page. 271.*

*Food & Sanitation.
Nov. 18. 1893.*

The amount of albumen present in an extract is considered to be a safe criterion of its food value, and in the tables under the head of flesh-formers (albumenoids and peptones with a small quantity of gelatine) Brand's essence is credited with 3.79%, Liebeg's extract with 9.55%, Valentine's meat juice with 2.48%, and Bovril for invalids with 23.89% .

Raw meat juice prepared as follows has been largely used at the Hospital for Sick Children, London.

Mince freely the best raw rump steak, with cold water, one part to four of the meat, stir well, and allow to soak for half an hour cold. *The juices* should then be forcibly expressed through muslin.

Raw Meat Juice.

Proteid (albumen)	5.1%	} 8.2 Total Nitrogen.
Extractives.	3.1%	
Salts.	.7%	

Best Beef-tea (1 lb. to 1 pint).

Proteid (albumen)	1.02%	} 2.84 Total Nitrogen Element.
Extractives.	1.82%	
Salts.	.88%	

Treatment of this

It will simplify the subject if I adopt
 the excellent classification given by Sir Douglas
 Powell in his book on Diseases of the Lungs.

*Diseases of the Lungs**Powell. Page 242.*

I. Stage of Hyperoemia.

Principal symptoms likely
 to call for treatment.

- a - Shock.
- b.- Pyrexia.
- c.- Pulmonary congestion.
- d.- Pain.

II. Stage of Consolidation.

(From the fourth or fifth day to the crisis).

- a.- Heart Failure.
- b.- Hyperoemia of the lung
 (due to heart failure &
 vessels paralysis, not
 inflammatory.
- c.- *Continued pyrexia & pain.*

III. Period of Crisis.

- a.- Heart Failure.
- b. Pulmonary oedema.
- c.- Exhaustion.

IV. Stage of Resolution.

S T A G E O F H Y P E R O E M I A .THE SHOCK.

The shock at the onset of the disease is considerable and may be very severe at the two extremes of life, but usually responds to treatment without alcohol, although this should not be withheld if the physician considers its administration advisable. Usually rest in bed and warm liquid nourishment tide the patient over this difficulty. There is ^{occasionally} ~~often~~ considerable nervous disturbance usually transient in character. It ~~is~~ ^{rarely}, however, calls for the administration of bromide of potassium and ammonia.

PROGNOSIS OF CASE FROM ONSET.

Frequently at this stage it is possible to form an opinion as to the severity of the case, by observing the impression the disease makes upon the nervous system. If the patient seems knocked down by the disease, hardly able to bear the trouble of the physical examination, the attack will probably

be a severe one. There is frequently a blueness of the lips long before there is any physical evidence of any pathological change in the chest.

PYREXIA.

The pyrexia and pain call for treatment in the stages of hyperoemia and consolidation alike, but the danger of cardiac failure is greatest towards the close of the stage of consolidation. At this time the physical signs and symptoms are at their worst and the patient's condition becomes desperate. His strength is well nigh exhausted and it becomes a question whether death or the crisis will put an end to his sufferings. The pyrexia is often severe, but usually of short duration, and now that the rise of temperature in disease is not considered as of necessity an evil, it is not dealt with so severely.

ANTIPYRETIC DRUGS VERSUS EXTERNAL APPLICATION OF COLD.

The practice of forcibly bringing down the temperature by means of drugs is now regarded more in the breach than in the observance. It is consid-

ered that the temperature may be reduced but at the same time the nervous system is weakened by the drug and the patient rendered less able to weather the storm. More and more in the treatment of pyrexia is the external application of cold replacing the administration of drugs. At the ~~British~~ meeting of the Brit. Med. Assoc. Prof. Osler of Philadelphia stated that, whenever in his wards a typhoid temperature rose to 102°5" F. the bath was resorted to and by this means he was satisfied that from three to four % more of his cases were saved. He acknowledged that the bath was a great nuisance and much increased the work of the wards, but all this was endured for the sake of the 3 - 4% lessened mortality.

Many think a great responsibility rests upon those who by means of antipyrine and other drugs seek to lower the temperature while they lose sight of the depressing action upon the heart and nervous system.

Dr Hood in a paper read before the London Clinical Society condemned the administration of large doses of salicylate of sodium in the often appalling high temperature of acute rheumatism

Lancet. Nov 11 1893

Five years afterwards he wrote to the Brit. Med. Journ. upholding this view and stated that in the interim he had seen many cases that confirmed the views he then held and maintained that cold-bathing and the administration of alcohol are the only true remedies. The treatment of the pyrexia of pneumonia resolves itself into

1. Treatment of pyrexia (temperature between 103 and 104° F).
2. Treatment of hyperpyrexia (temperature above 104° F).

"In cases then of pneumonia with what may be regarded as the temperature normal to the disease ranging between 103° & 104° F. no special antipyretic measures are indicated."

Nevertheless a class of cases do not come under this dictum. There is a group of cases in which although the pyrexia is not severe, ranging between 103° & 104° F. yet owing to the sensitiveness of the patient's nervous system it is ill borne as evidenced by the delirium, restlessness, brown-tongue and so on.

*Discussion on
Acute Pneumonia
Brit. Med. Assoc.
meeting. 1895.
Dr. D. Powell.*

Such cases call for active treatment and 5 grain doses of quinine, and tepid-sponging, especially with the addition of some stimulating evaporant, such as eau de cologne, will reduce the temperature within the degree of comfort, that is between 102° & 103°. F.

In hyperpyrexia to control the temperature I rely upon quinine and the application of cold externally. When the temperature reaches 104°F. I give Grs X. of quinine and in three or four hours Grs V. The Grs V. of quinine may be repeated every three or four hours if the temperature does not fall until about grs XXV. to grs XXX. have been given. If, however, after the first grs X the temperature does not fall or only falls a little to rise again probably in a short time I do not wait to see what effect the repeated grs V. doses will have, but at once resort to sponging with tepid water and if this will not suffice, with cold water, or if circumstances (the surroundings of the patient) allowed it would after sponging apply the ice-cradle. Some authorities apply cold locally to the chest by means of cold-compresses, the ice-bag or the ice-pack and each measure has special advantages under special conditions and will be considered later on.

Cold baths have been used, but not to any great extent and are said to be too depressing for children; ~~and~~ in their case it is better to immerse them in a bath of about 90°F and gradually cool down to 70°F. This was the method advocated ~~when I was a student~~ by *when I was a student* Prof. Grainger Stewart, and experience has shown that it acts very well. *The case of* In adults bathing is most difficult in private practice, but the patient may be lifted on to a sheet of mackintosh which can be so arranged that when the head of the bed is raised the water thrown over the patient at that extremity will run off into a bucket placed at the foot. This does not necessitate the removal of the patient from the bed and altogether occasions less fuss.

* Ice cradling, a method of applying cold long used at the London Hospital and now used at the Middlesex Hospital as well, has been adopted by Dr Wm Soltau Fenwick to the treatment of the pyrexia of pneumonia and is not open to the same objections as the bath. It is now his custom to combine it with initial sponging of the body with water at a temperature of 116°F

* Vide "The use of cold applications to the chest."

I am encouraged to see that Sir Douglas Powell gives quinine a high place in his treatment of the pyrexia of pneumonia. If the temperature amount to 105°F. Grs V repeated every three hours is given, with perhaps in the case of an adult Grs X to begin with. This with tepid sponging is his usual treatment when the temperature reaches 105°F. If this does not bring the temperature down or it continues to rise in spite of the quinine and tepid sponging, he resorts to the cold pack or cool bath at 70 or 80°F, and in children usually the warm bath at 90°F. In short, ordinary cases are treated by quinine and tepid sponging, extraordinary by a cool bath of 70°F. or 80°F. and a warm bath of 90°F. for a child.

In 1870 the London Clinical Society investigated the action of quinine in pyrexia and concluded that there was no conclusive evidence that quinine favourably influenced the course of any of the diseases in which it was administered. In the discussion on the use of quinine in pneumonia at the New York Academy of Medicine in 1887 Dr Ripley gave the results of a long series of experiments. The patients were nearly all adult males, and as far as

possible only uncomplicated cases were taken and no experiment lasted more than four hours. Some cases suffered from vomiting and severe cardiac weakness, but in all cases in which these doses of grs XX. to grs XL. were given the temperature did fall; in about half the cases from one to two degrees. If smaller doses repeated at short intervals had been given it is possible that some of these untoward effects might have been avoided.

Bouchard writing of the antipyretics of use in typhoid fever states that "the only objection to quinine, setting aside the buzzing in the ears, which however affects fever patients less than patients in health, is the accusation urged against it that it is liable to cause sudden death. During ten years out of five hundred cases I have only found sudden death occur seven times in patients who were taking quinine. Four of these deaths happened in the same week, and in several hospitals at the same time similar cases came under notice. But chemical analysis showed that the drug administered to the patients under the name of quinine was not really quinine. It was a compound little known in which cinchonidine predominated. If

Bouchard's

Auto-intoxicatio

Page. 211.

we set aside these cases therefore there remains three cases of ~~sudden death~~ of sudden death out of five hundred cases of typhoid fever, a proportion which does not exceed the ordinary percentage of sudden deaths in this malady. Two post-mortem examinations showed that in the patients who had died suddenly the heart was contracted and empty of blood. Now the toxicology of quinine teaches us that when sudden death is caused by this drug the heart is found to be dilated and gorged with blood."

"Quinine above all other antipyretic medicines possesses the invaluable advantage of reducing the temperature without injuring the heart and this it accomplishes by diminishing the production of heat.----- When properly used quinine diminishes the temperature for at least twelve hours."

*Von Kiernissen's
Cyclopedia of the
practice of medicine
Vol. V. Page. 164
Turgensen.*

QUININE AS A SPECIFIC.

Quinine as an agent directly antagonistic to the injurious effects of the pneumococcus.

A drug has long been sought which shall have the same inhibitory action upon the pneumococcus as quinine has upon the plasmodium malariae.

Indeed some consider that quinine has this specific action, or at any rate exerts a restraining influence either directly upon the pneumococcus or upon the injurious results produced by its activity.

"Surely a practitioner of experience and judgement, of acute observation and quick perception, acquires the faculty of distinguishing a prolonged series of consequences from a prolonged series of mere coincidences. ----- If such a practitioner sees that he obtains in a uniform manner better results with a particular method of treatment, he may surely trust the observation of his own senses and conclude that it has had something to do with the results obtained. And it must be remembered that the careful and guarded impressions of such an observer are worth far more than the evidence of blindly and mechanically compiled statistics, accumulated by a variety of persons and with variable faculties for accurate observation and just inference.

We have ourselves been led in this way to the conclusion that quinine frequently exercised a beneficial influence over the course of acute pneumonias of the class we are considering. And this belief has impressed itself on a considerable number

*Manual of
Medical Treatment
Vol. I. Page 562
et seq. -
Burrey Geo. W. D.*

of other observers. We do not, however, look upon this drug merely as a depressor of temperature, as some appear to do, but we regard this effect as incidental to some direct action on the infective morbid agent, or on its activities. We have ^{been} led to conclude from facts observed that quinine has an antagonistic effect upon the injurious activities of many infective germs, in what precise manner it is impossible at present to say. To call this effect "germicidal" is unjustifiable because it may possibly act in some way quite unconnected with the death of the germs. We have not given quinine in the large doses advised by Jurgensen and others, but we have always given it in a special manner which we believe greatly influences its favourable action. We give from 1 to 3 grains every two to four hours, according to the age of the patient and the apparent severity of the attack, and we give it dissolved in citric acid, and then added to an alkaline mixture so that it is really taken in an effervescing alkaline draught.

The following is the formula usually prescribed:-

Rx

Quininae Sulphatis.	Gr. I ad III.
Acidi Citrici.	Gr. X ad XV.
Sacchari Lactis.	Gr. X.

Misce fiat pulvis.

This powder is dissolved in a little water and added to the following draught.

Rx

Potassi Bicarbonatis.	Gr X ad XV.
Ammonii Carbonatis.	Gr. III ad V.
Syrup, Aurantii.	3 I.
Aquae.	ad 3 I.

Misce Fiat Haustus.

This dose is given every two, three or four hours, according to the age and severity of the case.

We give in a severe case grs. iiii of quinine every three hours - that would amount to grs XXIV in twenty-four hours. We have never found the slightest difficulty at any time in assuring the tolerance of these doses, and we have never had to have recourse to rectal injections of quinine as Jurgensen has."

In contra-distinction to this sanguine view the analysis of the 1000 consecutive cases treated at the London Hospital between the years 1880 to 1890 would appear to discredit the action of quinine when

given for its specific effect upon the cause of the disease. "This drug appears to have been administered with the view of exerting some special influence upon the exciting cause of the disease, and I find that in fifty-two cases it constituted the entire medicinal treatment, in doses varying from twelve to forty grains daily.

Analysis of 100

cases of Acute

Pneumonia.

W. Sollioz, Geneva

M.D.

Carrel, Jan. 31.

1891.

In thirty-two cases the average temperature varied between 103° and 104°F. and of these, six, or 19 per cent, died. In twenty cases the average temperature varied between 104° and 105°F. and of these, five, or 25 per cent, died. Stimulants were administered in thirty-nine cases; nevertheless two out of the eleven deaths occurred from collapse, when the fever suddenly defervesced at the crisis on the seventh day. From these facts it would appear that quinine in the above mentioned doses exerts but little beneficial influence in these cases, and after a very careful examination of the various temperature charts I have been unable to satisfy myself that the exhibition of the drug had in any way tended to modify the degree of fever. When these results are compared with those of the previous section (a group of 502 sthenic

cases treated by hot fomentation and poultices locally and various medicinal remedies) several points of similarity become apparent. In both cases the death-rate exceeds 20 per cent; under both methods of treatment the mortality bears a constant relation to the severity of the symptomatic fever, and both emphasize the ^{same} important fact - namely that fatal failure of the heart at the crisis is of frequent occurrence and results from the sudden withdrawal of the stimulating action of the fever."

ANTIPYRINE.

Posadsky and others have experimented with antipyrine but the results obtained were far from encouraging. The effects were more unsatisfactory and less reliable than those of quinine and the occasional bad symptoms following their administration were more severe and sometimes alarming. Among the twenty-five cases were five cases of collapse.

The therapeutic committee of the Brit. Med. Assoc. after investigating the action of the newer antipyretics, antipyrine, acetanilide, and phenacetin, expressed their opinion that with due care these ill effects are extremely rare, and not such as to

Brit. Med. Journal

March 4, 1894.

lessen the usefulness of these drugs.-

"Antipyrine acts upon the cerebro-spinal system in moderate doses affecting a fall of temperature and raising the blood pressure. Large doses depress the nervous system and lower the blood pressure, and symptoms varying from a slight diaphoresis to a severe collapse have been met with. As an accompaniment to the fall of temperature, profuse sweating, marked palpitation, and cardiac dyspnoea are not uncommon, and while these symptoms are referred with some probability to changes in the vaso-motor system, we can not altogether exclude the toxic effect upon the cardiac muscle. This should be borne in mind in acute pneumonia, where cases of death after antipyrine have been recorded. Instances may be cited where grs XX in the adult male, and grs X in the adult female resulted not only in a fall of temperature, but in great collapse requiring free stimulation to tide the patient over the difficulty. Experienced practitioners now limit its use to the early stages of sthenic pneumonia and are very careful of its use in diphtheria and typhoid where the heart's nutrition frequently suffers."

Brit. Med. Journal

March 14. 1894

On the whole, antipyrine has disappointed its well-wishers and most practitioners distrust its action in critical cases, having had occasional dangerous symptoms after its administration even in moderate doses. If given at all it should be combined with citrate of caffeine in the proportion of grs I of the citrate to grs IV of antipyrine.

THE PAINS OF PNEUMONIA.

Hypodermic Injections of Morphia.

The pain of pneumonia is usually worst in the stage of hyperoemia, although present and requiring treatment in the whole course of the disease. It is very severe where extensive pleurisy complicates the case and most distressing to see. One feels ^{much} inclined to inject morphia over the site of the pain, but it is dangerous to do so and the symptom is most safely combated by local means. This is the stitch in the side complained of by patients and indicates the seat of the lesion. The dyspnoea is often much aggravated by the pain, the patient fearing to take a deep breath.

PULMONARY CONGESTION.Calomel, Salines, Poultices.

If the case is seen at the onset I usually give grs V of calomel and put the patient upon alkaline diaphoretic mixture, the chief ingredients of which are ^{*}liq. ammonii acetatis and bicarbonate of potash. Hot linseed-meal poultices are ordered to be applied frequently, and stress is laid upon this.

These measures alone will considerably relieve the pain. I consider that the alkaline diaphoretic mixture relieves the pulmonary congestion by throwing the skin and kidneys into action, and also with the aid of the purgative by lowering the blood-pressure. The hot poultices relieve the local pain by determining the blood to the skin from the congested pleura by way of the superficial distribution of the intercostal arteries.

Aconite.

I am afraid of ^{using} aconite and never give it, [^] but even at the present day whole series of cases are treated with this drug. At the Dr Francis Hospital in New York, Dr J. H. Ripley treated 228 cases

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Strictly liq ammonii acetatis & bicarbonale of potash are incompatible. If the liq ammonii acetatis is pure it would be neutral in reaction; if impure it would contain free acetic acid which would decompose the bicarbonale of potash.

therapeutically an advantage acetate of potash,

principally with aconite. The bowels were first moved and then the patient was put upon the following mixture - Tr. Aconiti M XXIV., Tinct. Opii. Camph., \mathfrak{z} ii., Liq. Ammon. Acetate \mathfrak{ss} $\mathfrak{I}\mathfrak{f}$, Syrup Zingiberis $\mathfrak{z}\mathfrak{i}$, ~~Q. S.~~, Aq. ad $\mathfrak{z}\mathfrak{vi}$. M. Sig. $\mathfrak{z}\mathfrak{i}$ every two hours.

The aconite is said to have slowed and quieted the rapid and irritable heart, reduced the arterial tension and thereby lessened the amount of blood in the congested lungs.

Other authorities hold a very different opinion.- "Considering the nature and peculiar dangers in the later stages of pneumonia, perhaps the worst treatment of this symptom is that very generally adopted - viz. the administration of aconite.- The favourable issue of the disease usually turns upon the maintenance of heart powers and vessel tonicity, both of which are lowered by aconite at the very outset, sometimes beyond recall, as has happened in cases that have come within my experience."

There is, however, a rather widely spread opinion that it is of much value in cases occurring in children.

"-----In small doses to children and young people

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Powell. Page 243*

at the onset of an attack and for twelve and twenty-four hours only, we are bound to bear testimony to its remarkably good effects. We have not seen any particular good result follow its use in adults, and we should consider its administration most unjustifiable in aged people. But it has some subtle influence which we are quite unable to explain, over many of the febrile affections of children and young people. It allays the distressing sense of heat, it calms restlessness and it promotes sleep. We give from 1 to 3 minims of the tincture every three or four hours for three or six doses or one of Schief-flens' pilules of aconitine, each containing $gr \frac{1}{480}$ of a grain. We never give more than six doses, and we restrict its use to the first forty-eight hours of the illness."

Manual of Medical Treatment.

Vol I. Page. 565.

Burney Geo. M.D.

Leeching and Blistering.

As local measures for the relief of severe pain, leeching and blistering are the most important. Blistering can be tried when bleeding is contra-indicated. Sir Douglas Powell recommends a blister 3×3 or 4×4 ^{Incl} underneath the poultice as being very val-

uable.

From four to twelve leeches may be employed the number dependent upon the condition of the patient. To determine how many to use, the amount of venous plethora as evidenced by the amount of lividity and hardness of the pulse must be considered. If thought desirable the bleeding may be kept up after the leeches are removed by continuous poulticing.

VENESECTION.

It is at this point, towards the end of the Stage of Hyperoemia that the question of venesection forces itself upon our attention. At the present time those engaged in active practice are much troubled with this problem. Venesection is a procedure that cannot be lightly undertaken in private practice, for should the patient die during the illness his death will undoubtedly be attributed to the bleeding. Messrs Sturge and Coupland strongly recommend venesection in dangerous dyspnoea. To make their position clear the conditions where in their opinion venesection is unnecessary are first

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given and secondly the conditions calling for bleeding.- "If within the first forty-eight hours considerable dyspnoea (between forty and fifty respirations per minute) correspond to a large extent of lung occupation and the stethoscope indicates that the consolidation is only commencing, while the patient is attentive to the sensation of breathlessness, not cyanosed, able to take nourishment, and to take snatches of sleep it is best to adopt palliative measures only.

If however, the patient is not seen until later, say on the third or fourth day, (end of stage of hyperoemia, stage of consolidation commencing) a larger area of lung solid, with the dyspnoea he had from the beginning still extreme, some flushing of the face, with violent cardiac action and a weak pulse, then in our opinion it is prudent to adopt the only known means of relieving such dyspnoea, viz. bleeding."

They would extract blood to the extent of eight or ten ounces according to the relief given, and would not hesitate to bleed again, should the relief, though marked at the time, not be permanent."

SYMPTOMS OF OVERDISTENSION OF THE RIGHT HEART.

Overdistension of the right side of the heart is the condition calling for bleeding. It is evidenced by the small intermittent pulse, epigastric fluttering, a kind of peristaltic action of the heart, and the jugular veins distended and filling from below.

The following case was admitted into the General Hospital, Birmingham, under the care of Dr Simon\$.

H.H., aged sixteen, a history of a winter's cough and bronchitis, and of a now severe cough and shortness of breath, which had come on two or three days before. On admission the temperature was 102°F., respirations twenty-four; loud bronchial sounds were heard all over the chest and at the lower part of the right lung posteriorly more distinct; evidence of pneumonic consolidation; dulness on percussion; bronchial breathing; broncho^{pharynx}~~cony~~ and increased vocal resonance. His condition was worse next morning, temperature about the same, respirations forty per minute and the pulse one hundred and twelve per minute but of fair tension. The sputum was abundant, frothy, and tinged with blood. His condition was evidently critical, his face was flushed and dusky, breathing laboured, and there was much distress. Sixteen ounces of blood was removed from the right basilic vein. His general condition immediately improved, his face became of good colour, and the pulse tension was lowered. He soon went to sleep, and although his temperature was 104°F. the same evening, he had a good night and the next morning the temperature was 100°F. while his general condition continued improved."

*Birmingham
Medical-Review
Jan. 1894.*

Dr Simon concluded the account of the case with the remark that "whenever there are signs that the right side of the heart is becoming dilated, and the right ventricle not emptying itself properly, I am every year becoming more and more convinced that venesection is the thing."

In young children leeching is the form of bleeding recommended, followed by tepid sponging if the temperature is above 103°F. and in any case stimulants are freely given to them.

"In these little patients shallow and ineffectual respirations may exceed 100 a minute and under such conditions the lungs soon become engorged and in part collapsed and death ensues unless the condition is at once combated."

The child by its efforts of thoracic expansion pumps the blood into the sound lung which becomes engorged and the function of respiration fails.

"When extreme dyspnoea is accompanied by extreme prostration and the patient is at once breathless and unconscious, little may be said in favour of venesection."

Sturge & Coupland

Page. 263.

Sturge & Coupland

Page 435.

DANGER OF ALCOHOL IN SOME CASES OF DYSPNOEA.

"In the condition contemplated where venesection is recommended the marked cyanosis and prostration is apt to pass into a state of stupor which deepens into coma. The administration of alcohol at such a time requires great care for fear it should increase this fatal tendency. It is sometimes prudent to substitute ether and ammonia and externally turpentine stupes to the chest. "

The literature dealing with the subject of venesection in pneumonia shows many cases of temporary relief but few permanent recoveries and Messrs Sturge and Coupland while strongly advocating this procedure in suitable cases, acknowledge that "However striking the rally that follows blood-letting when judiciously employed, yet it must be admitted that the improvement in many cases is short lived."

Sir Douglas Powell writes highly of the good effect of local depletion, but as yet has not met with cases where more than local depletion was indicated.

Sturge & Coupland

Page. 435.

Diseases of the

Chest. Page 244

TRUE AND FALSE DYSPNOEA.

In forming an opinion as to the amount of

dyspnoea present and its character it is necessary to distinguish between true and false dyspnoea. The character is evidenced more by the manner than the rapidity of the respirations. The pleuritic pain which is aggravated by every respiration may be the cause of the shallowness and rapidity of the breathing. No full respiration is taken and what is wanting in completeness is attempted to be compensated for by pace. Women and nervous persons often suffer from dyspnoea which is not really dangerous. The general condition of the patient, the character of the pulse, and the amount of cyanosis present, are the conditions which should determine the opinion.

It should not be forgotten that causes outside the lungs may increase the dyspnoea, an abdomen distended by flatulence, or pregnancy, a deformed chest or uroemia. Possibly the patient had a dilated heart to start with, or was anaemic; two conditions of common occurrence.

STAGE OF CONSOLIDATION.HEART FAILURE.

But heart-failure is the great danger of pneumonia; the key-note of the treatment is to support the heart and maintain ^{vessel} venal tonicity until relief comes as it usually does with the crisis. The danger of cardiac failure is usually present and most dangerous in the period of consolidation and increases in gravity until the crisis is reached. The period of consolidation extends from the 4th or 5th day to the crisis. Subsidence of the fever, - the crisis - usually occurs on the 7th day and with less frequency upon the 5th and 8th. The 6th, 7th, 8th, and 10th days are those on which death is most common.

PNEUMONIA OF TYPHOID-TYPE.

In adynamic cases of pneumonia, often spoken of as typhoid-pneumonias because of their character and the typhoid-like prostration present from the

*The Collective
Investigation
Record, Page 47, 52.*

commencement, the danger of heart-failure is present from the beginning. Such cases require stimulants even in the Stage of Hyperoemia and there is more danger of giving too little than too much. These cases have high fever, rapid compressible pulse, tremulous tongue and delirium, which, however, is not usually violent.

CASES RESEMBLING IDIOPATHIC ERYSIPELAS.

In those cases of low-type which remind one of Idiopathic Erysipelas, Dr Powell recommends the administration of Tinct. Ferri Perchloridⁱ in M XX to M XXX doses with half ounce doses of liq. ammonⁱae acetatis. He further adds that this plan in alcoholic cases sometimes answers without the aid of alcohol.

THE DEGENERATION OF THE HEART-MUSCLE THE CAUSE OF HEART-FAILURE.

The danger of death from heart-failure is due to degeneration of the cardiac muscle, brought about by the high temperature and the presence of a

*Diseases
of the Lungs.
Powell. 245.*

poison generated in the body as in other infectious diseases, and also to the difficulty the right side of the heart has in forcing the blood through the circulation. Under these conditions the heart is apt to be overmastered, unable to force out the contents of its cavities and stops in diastole.

To increase the weakne^ed vis a tergo we have stimulating food, alcohol, quinine, and possibly digitalis, but all cases do not require the use of all these agents. All require rest and supporting food and most at some time in their course require alcohol. But it is to be remembered that many cases would get well without any treatment, and that meddling medicine is quite as great an evil as meddling midwifery. Poultices, the application of ice, salines, leeching, and perhaps venesection are all means to diminish the resistance in front.

HEART-FAILURE IN DRUNKARDS.

The tendency to heart-failure is always present, but particularly so in drunkards and patients who have taken alcohol in excess. Pneumonia in such cases, particularly if past middle life, is very

dangerous indeed. Pneumonia and Delirium-tremens is almost always a fatal combination.

Of the 1065 cases investigated by the Collective Investigation Committee (Brit. Med. Assoc.) the mortality was 10.4% among the total abstainers, 17.4% among the temperate, and 42.8% among the intemperate. The committee point out that under the head of total abstainers come more children than adults, and as the mortality amongst children from croupous pneumonia is less than that of adults. the figure 10.4% is probably too favourable. The term temperate is a loose one too, for what one man would consider temperate another would regard as intemperate and vice versa.

*Collective
Investigation
Record. Page 32.*

The question has been debated in the past whether it is better to give stimulants in suitable cases of pneumonia or to withhold them in all cases. As a help to decide the question I give below the mortality of Middlesex Hospital and of the London Temperance Hospital during the years 1889 - 1890 - and 1891.

Middlesex Hospital:-

274 cases of pneumonia, 49 deaths, mortality

18%.

London Temperance Hospital:-

54 Cases of pneumonia, 17 deaths, mortality
31%.

These figures are given by Sir Douglas Powell, physician to the Middlesex Hospital. I am disposed to regard alcohol as really the most important agent in the treatment of pneumonia. As soon as I consider the heart is beginning to flag, as evidenced by the pulse and general condition I give alcohol. I would give it before if from age or enfeeblement I felt convinced that it would be required. As soon as the excitement and the constitutional reaction of the Stage of Hyperoemia has passed by I am ready with the stimulant, and if I judge it to be needed or even likely to be I give it. It is a most valuable and powerful heart tonic and at service at a time when food is badly assimilated and the ill-nourished heart is subject to a most severe strain. Whisky or brandy is the best form in which to administer the alcohol, preferably the former, I think, but leave that to the choice of the patient. In favourable cases I commence with ʒi every second hour, increased at once to ʒii should the pulse and general condition demand it. If this is not sufficient and

the pulse be rapid, small, and perhaps intermittent and the artery badly filled I order 3ii or even 3iii every hour. The whisky or brandy should be diluted with a little milk or water, benger's food, or plain water if the patient prefers it. If the tongue is clean, whisky or brandy are best, should it become dry or vomiting supervene champagne is substituted in proportionate doses. A little ice in the champagne often relieves the sickness and is very grateful to the patient.

I consider about eight ounces of whisky or brandy in the twenty-four hours as the maximum amount that is likely to do good. Even larger doses are advocated by some. Dr Simon would give half an ounce every hour if he thought life depended upon keeping the heart going for a day or two until the crisis is passed. He would give even double that quantity if the pulse increased in rapidity and any sign of lividity occurred.

Do not stop the stimulant too early, for its continuance a little longer than is necessary will not do harm, whereas its too early withdrawal may cause a fatal collapse. I have seen this in the

Birmingham
Medical Review.
Jan. 1894.

case of a brother practitioner who had passed the crisis and was pronounced to be "progressing favourably". Within a few hours after the stimulant had been stopped he suddenly became collapsed and in spite of free stimulation with alcohol and ether subcutaneously, died. Possibly it was a case of post hoc ergo propter hoc, but it made a great impression upon my mind at the time and I am still of opinion that it was a mistake to have stopped the stimulant so early and so suddenly.

DIGITALIS.

About the time when symptoms of heart-failure are likely to occur and particularly if they are present the question of the administration of digitalis arises. Like almost every procedure in this disease this is a question concerning which few physicians agree. It would seem to be a most rational thing to stimulate the flagging ventricle to overcome what is only a temporary difficulty after all. This is the view of Dr Powell "with regard to the usefulness of moderate doses of digitalis - MvV. to M.X. - at this period of pneumonia whilst speaking

Diseases of the Lungs

Powell. Page 245.

from convincing experience of the fact, I would point out that this use of the drug is consistent with the most rational aim in the treatment of the disease." Some would give large doses of digitalis under these circumstances. "The feeble and irregular pulse of critical or pre-critical cardiac collapse that occasionally occurs when no digitalis has been given is best treated by free stimulation along with large doses of digitalis, and I have occasionally employed with success as much as a whole drachm of the tincture of digitalis every hour or every two hours and repeated from six to twelve times."

It is well to combine the tincture of nuxvomica in M.X doses with the tincture of digitalis. Of late the tincture of strophan^htus in combination with liquor strychninae has been strongly advocated. Strophan^ltus acts more quickly than digitalis, does not contract the peripheral arterioles and is better borne by the stomach. If, however, there is albumen in the urine it is better to rely upon the digitalis because the former drug is liable to irritate the kidneys.

*Discussion
on Acute Pneumonia
Printed at
Meeting. 1895.
Geo. W. Ralford.
M.D.*

OXYGEN INHALATIONS.

In January 1892 at a time when pneumonia was very prevalent an able article appeared in the Brit. Med. Journ. by Drs Lauder Brunton and Marmaduke Prickett on the use of oxygen and strychnia in pneumonia. They state "it is self evident if we can increase the oxygenating power of the air inhaled by patients in cases where the breathing surface of the lung is diminished, we may afford great benefit and in some cases may save life, particularly where the interference with respiration is of a temporary character as in acute pneumonia." It is not to be forgotten however that there are probably other factors to consider besides diminished breathing surface. Dr Powell considers that about this stage - towards the close of the stage of consolidation - the patient may be in danger of dying from (1). Failure of the heart. (2). from abolition of the respiratory function, (3). consuming *adema* of the sound lung. "In such cases oxygen inhalations are indicated to keep the blood aerated and serve further to give the patient refreshing snatches of sleep at a time when a sedative of sufficient strength would be very hazardous." Ho - 113

*Diseases of
the Lungs.*

Powell, Page 246.

CONFECTION OF TURPENTINE WITH ETHER & AMMONIA.

He adds, "In this condition I have found a combination of grs XX of the confection of turpentine with ether and ammonia very useful, strychnia either alone or in combination with digitalis being given in the alcoholic stimulant."

At the Brit. Med. Assoc. Annual meeting in 1895 when this subject was discussed by the Section of Medicine there was a general consensus of opinion that the administration of oxygen by inhalation was a valuable method of treatment in suitable cases and that it had a powerful tonic effect and ought not to be left until the last moment but used earlier in the case than it as yet had been.

In his paper Dr Brunton quoted the case of a hard worked clergyman of middle age, who when first seen was in extremis, unconscious, skin cold and covered with a clammy sweat, and loud mucous râles accompanying every respiration. Sixteen ounces of blood was removed and with the object of stimulating the respiratory centre grs $\frac{1}{60}$ of strychnia was injected subcutaneously and repeated in about twenty minutes. These measures having practically no effect, influen-

ced by the successful use of oxygen in a recent case of ~~snake~~ ^{snake} poisoning, Dr Brunton decided to try it in this case. A cylinder of oxygen gas was obtained and the gas conveyed by means of an india-rubber tube attached to a plain piece of glass tubing direct into the patient's mouth. The ordinary apparatus for administering nitrous oxide is equally suitable for oxygen and by this means the concentration of the gas can be better regulated. In from fifteen to twenty minutes Dr Brunton's patient began to mend, the colour became less livid although the patient was still completely unconscious. Within two hours consciousness had completely returned, his colour was healthy and he expressed himself as feeling quite well. Unfortunately, this great improvement did not last, sixteen hours afterwards his respirations again became embarrassed, his circulation feeble, and in spite of the continued inhalation of oxygen he rapidly became as bad as he was twenty-four hours previously and died.

"The value of oxygen in the treatment of pneumonia has, I think, been somewhat misinterpreted. It is two-fold:-

*Discussion
on Acute Pneumonia
Brit. Med. Meeting
1895. D. Powell.*

- (1). No doubt in the first place it will keep the patient alive on a small respiratory surface, which would otherwise be inadequate for that purpose and a very few cases may thus be saved.
- (2). But the second action of oxygen is a more important one and applies to many diseases besides pneumonia - namely the direct effect of its inhalation upon the heart ~~by sending~~ by sending more richly oxygenated blood to its muscular walls."

"The general practice of the London Hospital is only to use oxygen in desperate cases for the treatment of cyanosis, with the effect of maintaining life a little longer, but with no other good result. I would venture to urge its use also ^{indeed} and rather as a cardiac tonic to anticipate and possibly to avert heart failure by helping cardiac nutrition. Oxygen also lessens that restlessness which is attendant upon defective aeration and hurried breathing. Its effect is to lower the pulse rate and to diminish the number of respirations."

After the publication of Dr Brunton's article the records of numerous cases were sent to the medical journals. In most of them the temporary

improvement was marked and out of proportion to the number of permanent recoveries. As a rule the hypodermic injection of strychnia was combined with the administration and one writer - Dr Cooper Cripps-- attributed the temporary character of the recovery in Dr Brunton's case to the previous venesection. In the case treated by him there was complete unconsciousness, constant twitching of the muscles about the mouth, teeth tightly clenched, convulsive movements of the limbs, the face dusky, and the respirations slow and of a Cheyne-Stokes character. Considering the urgency of the symptoms to be due to failure of the respiratory centre he injected Grs $\frac{1}{20}$ of Strychnia with the object of stimulating the centre. Encouraged by the result he repeated the amount in a short time, and afterwards at intervals of a few hours until grs $\frac{1}{10}$ had been given. By this time consciousness had returned, the respirations were quite regular, and the patient afterwards made a complete recovery. The amount of strychnia injected in the different cases varied between wide limits and it is difficult to find any definite statement as to the hypodermic doses of this drug.

THE HYPODERMIC DOSE OF STRYCHNIA.

This point was discussed in the Lancet during the months of March and April 1892, and Dr S.H. Habershon, who in the reports of St Bartholomew's Hospital had given his experience of this drug subcutis as a stimulant to the cardiac and respiratory nervous mechanism, wrote to the journal respecting the matter. To quote verbatim as the point is of importance - "two to three minims of liq. strychninae (B.P.) injected hypodermically in the adult (equal to gr $\frac{1}{50}$ to gr $\frac{1}{30}$) form a considerable dose and my experience is that it is better to employ this dose at frequent intervals according to the urgency of the case and the effect of the first injection than to use a larger initial dose. In cases where the drug is effective a more vigorous pulse can be felt in a few minutes. It is impossible to make any rule as to the frequency of the administration of strychnia, but if the first dose produce no effect, and the condition is alarming I should not hesitate to use a second dose in a quarter of an hour. As a rule I consider the injection of gr $\frac{1}{50}$ every two hours to be a sufficient large dose in most cases." It should be care-

fully noted that these remarks apply to the administration of the drug in cases of cardiac and respiratory failure in pneumonia, typhoid, and other similar conditions, but not in cases of poisoning by chloral and other drugs.

In the Queen's Hospital, Birmingham, in cases of pneumonia strychnia is used hypodermically as a matter of routine if it is thought likely that the heart will fail, ordinary doses of the liquor strychninae (B.P.) i.e. about M iii are given, three, four, or six times a day. Frequently M V of the liquor has been given three times a day and no bad result has ever occurred. However in using this drug freely in these cases it is as well to remember that some patients, and particularly women, are very susceptible to the action of strychnia. I have known M iii of the liquor given by the mouth every four hours cause muscular twitchings, and M IV cause opisthotonos.

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THE STAGE OF CRISIS.

The sudden change from the stress of the inflammatory storm through which the patient has passed to the quietness that follows the rapid fall of temperature is not without danger of its own. Heart-failure may occur here. There is considerable danger of collapse and the patient must be watched and if necessary, stimulants given with a free hand. Pulmonary oedema due to loss of vascular tone and enfeebled cardiac action may be present. It is frequently advantageous to change the form in which the alcoholic stimulant is administered. Champagne or port-wine in proportionate doses may be given instead of brandy or whisky. Strychnia may be added to the mixture with or without small doses of digitalis. Some authorities lay stress upon the value of quinine - Grs III with digitalis.

The sweating is frequently very profuse and exhausting, the patient's clothes being literally wet through. It is advisable if possible to replace these by warm dry flannel garments. This should be done carefully and without raising the patient from

Powell.

Diseases of the Lungs

Page 244.

the recumbent position. In very critical cases it is best not to disturb the patient in any way for a time.

The stimulant should be gradually decreased in amount as the patient can bear it, more food, or food of a more solid character being given to replace it. After a few days phosphoric acid and strychnia, quinine and iron, or some simple tonic may be given.

TREATMENT OF DELAYED RESOLUTION

Iodide of Potassium & Iron,

As a rule resolution proceeds rapidly, but delay sometimes of a most obstinate character may occur where Iodide of Potassium with ferri et amm. cit. or some scale preparation of iron will do good.

Blistering.

Blistering or painting the surface of the chest with iodine may be tried

Mercury.

Of late the administration of mercury has been advocated by some in these cases of delayed resolution; preferably in the form of hydrg. cum creta which may be given two or three times a day in small

*Dr Howship.
Brit. Med. Assn.
Meeting. 1894.*

doses. It is given to promote absorption of inflammatory products in other conditions and particularly in eye cases, which are peculiarly under direct observation. It is given in parenchymatous iritis where it is of ^{the} greatest importance that the often abundant inflammatory products should be quickly absorbed, and its use in specific or pathognomic papillitis occupies an assured position. This is not due to ~~its~~ ^{their} syphilitic character because Swanzy expressly states that he has treated cases of parenchymatous iritis with success by this agent which were demonstrably non-syphilitic and in many cases of Optic neuritis so treated there is no evidence of such disease.

The action of the bowels and kidneys should be kept under observation for the inflammatory products are principally eliminated by these channels.

SECONDARY RISE OF TEMPERATURE DURING CONVALESCENCE.

"In some cases a secondary and recurrent rise of temperature with slight chills and sweating attend the resolution process; quinine must then be

Swanzy.

Diseases of the Eye.

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Powell

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Organs. Page 248.

steadily continued, or if this drug disagrees arsenic may be tried, the patient being kept very strictly at rest. After consolidation has cleared up it is not uncommon for there to be some return of crepitation over the seat of a past pneumonia; this, which is doubtless due to the local atonicity of vessels favouring a passive congestion is best treated by the employment of tincture of iron internally. A very analagous condition is met with in the course of acute nephritis, in the course of convalescence from which we may get increased albumen and some return of blood in the urine, without any associated rise of temperature."

Convalescence is usually rapid and in most cases practically complete in three weeks, but if possible a change of air and surroundings with the consequent rest should be taken. In scrofulous and lymphatic cases the sea-side is most suitable, but otherwise any place which is dry, well drained, and not too much exposed will do.

SOME OCCASIONAL SYMPTOMSAND COMPLICATIONS.NERVOUS SYMPTOMS.

In the course of the disease severe headache, sleeplessness (with or without delirium) delirium, convulsions, and more rarely mental derangement may all call for treatment.

Delirium.

Delirium when present more usually occurs at the onset of the disease, before the pathological changes in the lungs are established and although often severe at such a time, may precede an ordinary or even ^a mild attack. In children the initial rigors are occasionally replaced by convulsions and frequently by vomiting. Delirium is not confined to the onset it also occurs, but less frequently, in the course of the disease, and at or near the crisis and this form is more serious than the initial delirium. It is sometimes most violent and it is imperative that the patient be carefully watched and nursed. Every effort

must be made to make the sufferer as comfortable as possible and a capable nurse is the first means to this end; if possible one whose face and voice are familiar to the patient. The attention to little things, such as the light of the room, regularity as to feeding and administration of medicine are all important in this condition.

Delirium & Alcohol.

Delirium and alcohol is an important practical point to consider, for in one form it is called for, while in another it ought to be carefully avoided, for its administration would only increase the fatal tendency to coma. There is a form of delirium apparently directly due to the profound asthenia. It is low and muttering, resembling that of typhoid fever. There is a fever-like prostration and a typhoid-like delirium, and here alcohol will sometimes work wonders and it is astonishing the quantity which can be taken without any toxic symptoms arising. Free stimulation is the treatment called for and by this means many an apparently hopeless case has been saved. But in another group of cases the delirium is marked

Blinge + Coupland

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and violent, but co-exists with great prostration a soft and compressible pulse, shallow and panting respirations, with marked cyanosis and sweating.

With it all the patient may occasionally display great muscular power, jumping out of bed while under the influence of some delusion if not prevented. Such a case may rapidly become comatose; narcotics are out of the question, and alcohol, which is a narcotic, if given at all must be administered with caution and watchfulness and a clear perception of the possible danger ahead. In bad cases the delirium may be associated with a low temperature and a slow pulse (but soft and feeble) and tends to become muttering with jactitations, facial spasms, and picking of the bed-clothes. The fall of temperature and slowing of the pulse has not benefited the patient. Passive diarrhoea is frequently present and a typhoid condition supervenes ending in death.

Apical Pneumonia.

In young subjects pneumonia of the apices is often attended with violent delirium, and even maniacal excitement, which may occur at the onset of

the disease or even later. Such cases however appear to do quite as well as others.

"In regard to the apex (upper part of the lung) as a seat of pneumonia, it is to be noted that it is ^{as} favourable for the patient as any other (in its duration and mortality indeed it is more favourable than most)."

*Collective Invest-
igation Record.
Brit. Med. Assoc.
Vol. II. Page 68.*

Sleeplessness & Restlessness.

Sleeplessness and restlessness is often very troublesome and commonly depends upon pain and sheer weakness. If these are relieved - the former by applications to the chest wall and the latter by feeding and stimulants - these symptoms will usually disappear. Cases are met with which will not yield to treatment in this way, and the question of a narcotic arises. "In the failure of indirect attempts

Hypodermic Injection of Morphia in Obstinate Sleep- lessness.

"In the failure of indirect attempts to procure sleep by soothing pain and supplying adequate

nourishment - measures on whose importance we cannot too much insist - it is best we think in the case of utter and obstinate sleeplessness lasting over two or three days - a condition seldom without some delirium - to give one full dose of morphia by sub-cutaneous injection, or by the mouth, repeating this after two or three hours interval." In this connection it is as well to revert to the danger of alcohol in violent delirium associated with great prostration as previously mentioned.

Sleeplessness frequently associated with nocturnal delirium and great restlessness is often present in drunkards, and those who have taken alcohol in excess and is always serious. Extreme restlessness without delirium is probably quite as dangerous. These persons are bad subjects for pneumonia, the weakened heart and irritable and excited nervous system can ill bear the stress of the disease. The amount of dyspnoea and heart feebleness is often quite out of proportion to the other symptoms and the amount of lung area involved. These cases are very difficult to control; there may be little fever and the patient cannot and will not understand how ill he really is.

Stinger Coupland

Page. 413.

Some time ago a patient in this condition in spite of my earnest entreaties would not go to bed and shortly after I had left the house insisted upon going into the garden and after a struggle with his nurses did go, and there died of syncope. In such cases as these the question of stimulants and narcotics causes much anxiety and the medical attendant feels that the decision carries a heavy responsibility with it.

Hypodermic Injection of Morphia & Free Stimulation
in Alcoholic Cases.

"In the pneumonia of drunkards where there is sleeplessness and the delirium takes the busy form suggestive of delirium tremens (whether or not that name is strictly applicable) narcotics in full doses, whether hypodermic or otherwise, together with free stimulation is in our opinion as safe and as imperatively called for as with delirium tremens alone."

Swigs & Loupland

Page. 431.

In fact these cases as far as treatment goes resolve themselves into delirium tremens cases and the whole question of giving or withholding stimulants arises.

RESPIRATORY SYMPTOMS.Cough.

A short ineffectual cough is usually present at the commencement of the attack, to disappear later on. The alkaline diaphoretic mixture usually given in the early stage of the disease will usually make it looser and less troublesome. If necessary the bronchitis kettle may be used.

Haemoptysis.

The initial hyperoemia in pneumonia of the apices or upper lobes sometimes occasions a severe attack of haemoptysis. It is practically established that in ordinary haemoptysis both during and immediately after the attack the temperature in the majority of cases is actually sub-normal.

Ordinary Haemoptysis versus Pneumonic Haemoptysis.

In these cases it is said that the temperature is always above normal and should a patient who has previously been in sound health have an attack of haemoptysis with a decided rise of temperature, —two or three degrees,— pneumonia of the apex or upper lobe may fairly be diagnosed. Five cases of haemoptysis with pyrexia of several degrees have been recorded by Dr Hood. In all these cases pneumonia of apex or upper lobe subsequently developed. A similar series

Dr Hood.

Lancet: Aug 18.

1894.

Lancet:

June 18. 1894.

of four cases was subsequently published by the same writer.

OEdema.

OEdema of the sound lung may ensue in the later stages of the disease. The left ventricle failing to keep pace with the right, the blood is pumped into the lung faster than it is withdrawn, comparative stasis occurs resulting in an escape of serum which accumulates in the pulmonary interstices, alveoli and bronchioles of the lungs. This most dangerous condition is apt to occur at the end of the period of consolidation and its treatment has been described under that head.

Powell.

*Diseases of the
Lungs.*

ALIMENTARY SYMPTOMS.

Anorexia.

"Aversion to food, real inability to swallow or retain nourishment is a very serious symptom in view of the exhaustion of a week's pyrexia. "

Sturges & Coupland.

Page 410.

BILIOUS SYMPTOMS.

Often enough the symptoms of a severe bil-

ious attack usher in an attack of pneumonia, particularly in persons prone to this disturbance. A few grains of calomel at bed-time followed by a dose of Karlsbad salts in the morning is good treatment.

JAUNDICE.

This symptom is sometimes met with and varies from a slight icteric tint to marked jaundice. It is said to have no bearing on prognosis, but I have seen it mostly in severe cases. It occurs more commonly in right basilar pneumonia and many a child so affected has been thought to suffer from jaundice only. It does not appear to depend on duodenal catarrh and is best left untreated.

VOMITING.

Except as an early symptom in children vomiting does not usually give much trouble.

DIARRHOEA. In the adult this condition seldom calls for treatment. In most cases it is due to some error in feeding the patient and with regulation of the diet, and warmth to the abdomen it usually disappears.

If not, a dose or two of bismuth with small doses of Liquor Opii Sedativi will relieve it. The diarrhoea of crisis should not be restrained unless excessive.

PREGNANCY.

Pneumonia is no doubt one of the most serious complications of pregnancy, and the mortality of the disease is as shown by statistics increased by this complication. Dr Rendu states that the more advanced the pregnancy the graver the pneumonia, the cause of this being partly mechanical from diminution of haematosiis, but in addition the heart is already fatigued and the kidneys to a certain extent altered by the pregnancy. Abortion, which is practically almost invariable, aggravates the situation and appears to be due to the death of the foetus by infection.

*Journal de
Medicine et de
Chirurgie Pratique.
Paris, Vol. I. 1893.*

P N E U M O N I A C O M P L I C A T E D W I T H
O T H E R M O R B I D C O N D I T I O N S .

BRONCHITIS.

One of the commonest and most dangerous complications is bronchitis. Lobar Pneumonia may be engrafted upon an acute bronchitis or occur in a bronchitic subject who is never without some evidence of his complaint. A certain amount of bronchitis is an invariable accompaniment of croupous pneumonia, but clinically bronchitis can only be said to be present where there are in addition to the signs of pneumonia, consolidation, ronchi, and râles abundantly scattered over both lungs. The cough is most troublesome, the expectoration fluid bloody and more abundant, and in very bad cases becomes dark coloured - prune juice -. The dyspnoea and cyanosis is always much increased. The treatment is not altered much by this complication, expectorants must be given sparingly because of the pneumonic condition and if there is much trouble in coughing up the phlegm chloride of ammonium may be given in the mixture. Stimulants should be freely given.

Sturge & Coupland
Page 102.

EMPHYSEMA.

Emphysematous subjects rarely have pneumonia but owing to the usually associated heart changes in this condition, it is a dangerous complication.

ASTHMA.

Pneumonia may occur in an asthmatic subject and in such a case asthmatic attacks may supervene at the most inopportune time. When the patient is struggling with the urgent dyspnoea his sufferings and dangers may be still increased by the supervention of an asthmatic attack as evidenced by the loud whistling and sibylant râles heard all over the chest free from consolidation and the marked temporary aggravation of all his symptoms. Whatever means in the past have been of service to relieve the asthma may be tried, avoiding, however, those which would depress the heart. This complication is a grave one.

PLEURISY.

Except in rare cases where the consolidated lung is centrally placed, pleurisy is always present. Out of 100 cases Dr Osler found only two in which the

pneumonia was deep seated, and did not reach the surface. But the pleurisy may be extensive and much increases the patient's sufferings, especially if the diaphragm is involved. In many cases there is effusion which may persist after the resolution of the pneumonia and require tapping. This effusion is liable to become purulent.

*Canadian
Medical & Surgical
Journal.
May. 1885.*

EMPYOEMA.

This may be a complication or a sequel, usually the latter, and more commonly in children. After the crisis - which may be obscure or absent - the patient does not appear any better, dulness and bronchial breathing persist, the side is enlarged, the heart is displaced and the pyrexia which persists becomes hectic in character. An exploratory puncture can only decide the question.

A pneumonia may have commenced with all the characteristic features of the disease, but there has been no characteristic crisis. Effusion is the most common condition leading to apparent delayed resolution, and in all such cases the chest should be carefully examined with this possible explanation clearly

in view. The effusion is poured out into the pleural cavity pari passu with the resolution of the hepatised lung and comes at last to replace it. The diagnosis of this condition is important, because should effusion be present tapping will probably be called for. The diagnosis is not always easy between two such elementary conditions as solid and fluid.

"When serous effusion is very considerable giving rise to unequivocal bronchophony, tubular breathing, want of resonance and vocal vibration, physical examination has repeatedly led to the mistaken belief that these signs resulted from a pneumonia or other consolidation of the lungs."

"Case.1. The following is a typical example of a pneumonia followed by purulent effusion. The patient, a large-framed, strongly built man, forty-eight years of age, had been suffering from a severe attack of pneumonia for about a month. The lung was thought not to have cleared up and certainly when the chest was examined, the physical symptoms were strongly confirmatory of this opinion. The lesion was on the left side, which was dull, but not to that extent usually present when fluid is in quantity. Vocal resonance and tubular breathing were both very distinct. Cough was loose and constant, the temperature ranged from 100 to 103° F. The chest was large and deep, and it was ~~not~~ difficult to localise the apex beat of the heart. I considered that these sounds were best heard to the right of the sternum. From the irregularity of the temperature, from the fact that there had been no crisis, and from my belief that the heart was misplaced I felt justified in suggesting an

the

Twenty-seventh

Aphorism of

D. Addison.

D. D. W. C. Hood.

Case.

Aug. 18. 1894.

exploration, the result being that two pints of creamy pus were withdrawn by aspiration and the patient made a rapid recovery.

Case II. A woman had been suffering from an attack of ordinary lobar pneumonia. She was twenty-six years of age and in the sixth month of pregnancy. There had been no crisis although the temperature had gradually fallen. On admission to the West London Hospital it was but slightly raised and in a few hours after the patient was put in bed it was sub-normal. Dyspnoea was the principal symptom. The left chest was absolutely dull the dulness extending beyond the middle line of the sternum. Posteriorly tubular breathing and whispering pectoriloquy were well marked, the heart much displaced, was apparently beating below the right nipple. The patient was in such distress, the respirations being 66, that aspiration was at once performed and rather more than two pints of sweet pus being removed.

The diagnosis was not difficult, yet the temperature contra-indicated purulent effusion, there had been no rigor, or any symptom indicative of pus. The total duration of illness was short, the early initial stage was that of a pneumonia which drifted by degrees into a vast purulent effusion with so much tension and disturbance of parts that I thought it best to remove the fluid by degrees. I aspirated again in a few days, the patient making a complete recovery.

Case III. The patient, a finely built, muscular young fellow was admitted to the hospital for pneumonia, the primary symptom being a rigor. The constitutional symptoms were so pronounced that a careful examination was impossible. During the first week there was maniacal delirium and it was

with difficulty that the patient could be kept in bed. The clinical features were purely those of a lobar pneumonia. The delirious stage was followed by a sharp attack of pericarditis which again prevented a careful examination and it was not until the patient had been a fortnight in hospital that we were able to estimate the amount of mischief. The right chest was dull, breathing tubular, and bronchophony well marked and the heart's beats were in the normal position. The patient's strength was improved. The liver was not depressed and vocal fremitus could be felt over the dull area. The clinical evidence was against the presence of fluid. The cough however had entirely altered in character, it was peculiar, coming on with storm-like severity, suggesting an attack of whooping cough. There was no expectoration. A hypodermic syringe detected pus, three pints were removed, subsequently the chest was freely opened and the patient made a complete recovery.

I would especially invite your attention to the peculiarity of the cough which may often attend these residual effusions. It is essentially paroxysmal, coming on after movement and is not usually followed by expectoration. I believe that such a cough following upon the symptoms of an ordinary pneumonia is pathognomic of the presence of fluid, which however may be in very small quantity. In one case, that of a child 3 iv of pus was aspirated, the cough, which was akin to pertussis, ceased upon the withdrawal of the fluid."

PERICARDITIS.

This is a commoner complication than was

formerly thought to be the case. It usually occurs in severe cases, often in rheumatic subjects, but per se it does not appear to add to the gravity of the prognosis.

PAROTITIS.

It is only in markedly asthenic cases that this occurs and is really due to the profound toxoemia. The inflamed gland usually suppurates and early incision is called for.

TONSILLITIS.

Rather a rare complication and does not influence prognosis. Next to pneumonia itself bronchitis and tonsillitis are most ^{apt} to occur with pneumonia in the same house.

*Collective
Investigation
Record.
Page 33.*

RENAL-DISEASE.

"There is direct clinical evidence to prove that imperfect elimination of urea is to be reckoned among the causes which predispose to pneumonia. Defective secretion on the part of the kidney (whether from acute or chronic nephritis) may have this amongst

*Surge of England.
Page 113 et seq.*

other consequences ----- according to Dr Dickenson the marked tendency to inflammation which characterises lardaceous disease of the kidney is seen most conspicuously in the lungs and next often in the pleura."

"Albumenuria is a common occurrence in pneumonia. Before suspecting the kidneys of disease it is necessary to ascertain the precise character of this particular symptom - a task that may be practically impossible as long as the actual stage of inflammation endures. A large amount of albumen with epithelial casts - indications of tubal nephritis - are not necessary signs of pre-existing renal disease, inasmuch as in rare cases both kidneys and lungs are inflamed together from a common cause.

Surger Cupland

Page 114.

THE PROGNOSTIC VALUE OF ALBUMENURIA.

"In the vast majority of cases some trace of albumen may be discovered in the urine before the third day of the disease. But I believe that the amount of albumen which can thus be demonstrated is in itself a point of very considerable prognostic

*Analysis of
1000 cases of
Acute Pneumonia*

W. P. Fenwick, M.D.

*Lancet, Jan 31.
1891.*

value and one which seems to have been much overlooked by systematic writers. I find that the quantity of albumen present in the urine during the first three days of the disease bears a definite relation to the attendant mortality. Thus of cases which presented one-fourth of albumen 32 per cent died; of cases which presented one-third of albumen 52 per cent died; of cases which presented one-half or more, 86 per cent died."

Of all the diseases complicated by pneumonia, none have so serious an effect as chronic Bright's Disease. Pneumonia in the subject of either form of this affection is of great gravity. -----The subject of renal disease (diagnosed to be so suffering) speaking generally do not die of pneumonia. Any impartial investigation will find that the patients dying of pneumonia with granular kidney are just those in which the renal disease has not been prominent during life. Out of 144 autopsies after pneumonia, 29 gave evidence of granular kidney, i.e. 20%. Out of 77 examinations of declared Bright's Disease there were only five in which lobar hepatization was met with, or about 7%."

Sturge & Coupland

Page. 149.

In those cases of pneumonia complicated with Bright's disease which do recover, the resolution of the consolidation is often much delayed and not unfrequently the expectoration becomes more fluid and very offensive as if some portion of the consolidated area had broken down. Blistering and all counter-irritation with a view to hasten resolution must be used very cautiously for the vitality of the tissues is low. As soon as possible the patient should be put upon a mixture containing the tincture of iron with strychnia and possibly digitalis.

MENINGITIS.

This formidable complication may supervene upon an attack of pneumonia, and usually such cases die. It is questionable whether meningitis is ever simple. When once the diplococcus has invaded the body it appears to be a matter of chance whether pneumonia or meningitis is set up. "In some this lesion is associated with pericarditis, in others with endocarditis."

An epidemic of pneumonia and another of

Sturge & Dupland.
Page 119.

meningitis may occur side by side in the same community. During the prevalence of an epidemic of cerebrospiral meningitis, micro-organisms, principally diplococci, have been found in the exudation of the meninges.

INFLUENZA PNEUMONIA.

The recent epidemics have furnished many examples of this form of the disease. In most cases the attack is preceded by the usual symptoms of influenza and the inflammatory process appears to spread from the bronchi to the alveoli. But during an influenza epidemic besides these cases there are many which have all the signs and symptoms of pneumonia from the onset. In 1890 at the height of the influenza epidemic of that year I had under my charge a young farmer, the only one of a large household who had not been suffering from the prevailing epidemic, but on the contrary was struck down from the first with all the signs and symptoms of pneumonia which however was typhoidal in the extreme with profound prostration calling for free stimulation.

It is a matter of common medical experience

that during an Influenza epidemic, cases of ordinary croupous pneumonia are far more numerous. The people exhausted by the depredations of Pfeiffer's bacillus more easily succumb to the inroads of Fraenkel's pneumococcus. But at the same time there are many cases of undoubted influenza pneumonia. Pathologically it is more lobular than lobar; as a rule there is not a persistent defined area of lung dulness, but large tracts of lung tissue become rapidly implicated. Many cases have a wandering character, first apex, second middle lobe, and so on. Pfeiffer's bacillus has been found in many cases of influenza pneumonia.

Clinically the onset is insidious, there is usually norrigor, the temperature is more remittent and shows all the characteristic irregularities of influenza, the skin is moist and sweating, the expectoration is not rusty but frothy and purulent and crowded with bacilli, which look like micrococci. It is very infectious and should be disinfected. Defervescence is by lysis. Altogether the cases more nearly resemble typhoid than ordinary pneumonia. Empyœmia often complicates these cases of influenza pneumonia

and ~~it~~ is remarkable in that recovery usually occurs without operation. Dr Dreschfield had many cases in Manchester where exploration demonstrated the presence of pus but which made good recoveries without operation.

D. Dreschfield
Brit. Med. Meeting
1895.

These attacks have been considered as due to lung paresis and in two cases examined after death the pneumonia was of this kind.

D. W. C. Hood.
Cancel.

Aug. 18 1894

The vital depression is great, and free administration of alcohol is called for and all depressing drugs such as powerful antipyretics are best avoided.

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P N E U M O N I A I N C H I L D R E N .PNEUMONIAS OF ADULTS & CHILDREN CONTRASTED.

Pneumonia in children is practically the same as pneumonia in adults, plus the variation of symptoms due to the more mobile nervous system of the child and the readiness with which the different mucous membranes sympathize with one another. It is common enough for a gastric irritation in children to initiate an attack of bronchitis, and in some families the usual stomach disturbances to which all children are subject always result in a sharp bronchitic attack.

EARLY DIAGNOSIS .

Early diagnosis is often very difficult owing to the long interval elapsing between the first departure from health and the evidence of physical changes in the lungs. In this interval the child may suffer from diarrhoea, convulsions, delirium, and all kinds of nervous symptoms.

It must not be forgotten that apical pneumonia - using this term to include the upper part of the lung - is much more common in children than in adults, and that such pneumonias are usually attended with marked nervous symptoms. "In 120 cases collected by Dr Goodhart there were 2 apical to every 5 at the base."

Brit. Med. Journal. 1893.

"As many as six days may elapse before the physical signs are fully developed and if careless, they may be overlooked altogether."

Hinger's Pupland Page. 234.

The diagnosis is often most difficult owing to the frequent association of lung inflammation as a sequela of bronchitis and the ready production of collapse in children. On this account the percussion dulness would suggest a larger area of consolidation than actually existed. The so-called silent pneumonias in which the general symptoms and course of the disease point to this condition, but where although dulness is present the stethoscope reveals nothing owe their origin to collapse and partial blocking of the bronchioles.

The post-mortem room reveals the presence of gelatinous casts of pneumonic consolidation block-

ing the bronchioles and so preventing the respiratory sounds reaching the ear by the stethoscope. Should they, as they more commonly do, incompletely block the bronchioles the expulsion of the residual air is readily allowed, but there is no ingress for fresh air and collapse results.

Creeping pneumoniassometimes add to the difficulty, they differ only in degree from the forms seen in adults.

But the more common difficulty is the frequent association of lung inflammation as a sequela of bronchitis in children. Lobar & lobular pneumonia are widely different, but this wide interval is bridged over by innumerable gradations.

EARLIEST PHYSICAL SIGNS

The earliest physical signs are :-

- (a). Weakness of vesicular breathing at the affected part.
- (b). More or less fine crepitations heard only at the end of inspiration, while neighbouring regions give a higher percussion note than usual.

Stürger Dupland
Page. 231 usseq.

Jerky expiration over a limited area which afterwards became the seat of a pneumonia is noted by some as an early physical sign. It is considered that the early congestion of the lung tissue impairs its elasticity and the recoil of the lung losing its elasticity the air is forced out in a series of puffs.

Cancel:-

Sept. 23. 1899.

EARLIEST SYMPTOMS.

Attention may often be directed to the lungs by noticing the movements of the alae nasi. But the most important of all the early symptoms is an alteration of the pulse respiration ratio.

DIFFERENTIAL DIAGNOSES.

Broncho-pneumonia versus Croupous-pneumonia.

<p>Age. Infant, especially if neglected, im- properly fed, the rickety & syphilitic Those suffering from certain specific fe- vers, especially mea- sles and whooping cough.</p>	<p>Rarely infants, usually young children.</p>
--	--

Antecedent Disease.

Bronchitis, the lung inflammatory process spreads to the alveoli and by means of collapse in many cases.

Absence of any antecedent disease is in favour of croupous pneumonia. It may however follow bronchi-cho-pneumonia or even bronchitis.

Bi or Unilateral.

Usually bilateral, but no reliance can be placed upon this.

If unilateral there would be more likelihood of croupous being present, but it is frequently bilateral.

Course and Duration.

Very variable, apt to be temporary improvement.

Definite course, if not obscured by previous or co-existing disease.

Temperature.

Erratic, unreliable, as a means of diagnosis. Relapses

Usually a sustained temperature, but may vary widely.

and recurrent attacks

frequent.

Crisis.

No definite crisis as Usually definite.

a rule, but may be

present. (Hench).

"A child over 7 or 8 with a history of a sudden onset, a sustained temperature, exceeding 103°F and a single seat of consolidation in either lung, most probably has lobar pneumonia, but in young children and babies no such confidence can be safely entertained. Physical signs alone are not sufficient to differentiate between lobar & lobular pneumonia."

Pneumonia may be confounded with Meningitis, Scarlet fever with ill developed rash, typhoid or even typhus. The changed pulse respiration ratio will point to pneumonia and the free dilatation of the aloe nasi will suggest a pulmonary condition. In meningitis in infants the fontanelles are tense and bulging while in pneumonia they are retracted. Not uncommonly headache, drowsiness, obstinate vomiting, delirium, and even retraction of the head may be present in a case of acute pneumonia. It is quite poss-

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Page. 236.

ible for meningitis and croupous pneumonia to co-exist, as has been frequently verified by post-mortem.

"The latency of the physical signs, which may last from 4 to 6 days may along with the prominence of the cerebral and gastric symptoms readily lead to a mistaken diagnosis of meningitis or typhoid fever or even intermittent fever as I experienced in one case. Perhaps in such cases the pneumonia spreads from the centre to the periphery and only when it has reached this situation do the signs of consolidation appear. Wherever this does take place the gastric or cerebral symptoms which have hitherto been prominent usually become less so and the diagnosis at once becomes clear, nevertheless in some cases not until the fever is distinctly on the decline or even may have ended critically".

Early pneumonias are frequently sent to hospital as cases of scarlet fever, but should a rash be present, it is never punctiform and lacks the vivid redness of scarlet fever.

SYMPTOMS OF PROGNOSTIC VALUE.

Children are more likely to die of asphyxia

Henoch.

Lectures on

Children's Diseases

Vol 7. Page 418.

Trans. Syd. Soc.

than of any other immediate cause. They do not readily cough the phlegm up, they not only can not appreciate the need of so doing but have not the expulsive power. As a means of prognosis note the rate and character of the breathing and whether at the end of inspiration, the epigastrium, lower ribs and intercostal spaces are sucked in. The pulse and heart condition as evidenced by the face and lips are the next valuable aid. Lastly consider the amount and extent of the secondary symptoms, such as vomiting, diarrhoea. As in the adult, so in the child, death usually comes via the heart and particular attention must be paid to the pulse.

SEQUELAE IN CHILDREN.

- (a). Chronic pneumonia, due to the retention of the inflammatory products in the lungs.
- (b). The occurrence of pyaemia.

From the character of the physical signs the chronic pneumonia is very apt to be mistaken for phthisis. The child recovers in general health, gets fat and rosy, but the early signs of consolidation remain unaltered. Nevertheless many of these cases do well

in the end, and caution must be observed before a diagnosis of phthisis is given.

EMPYOEMIA.

Empyoemia is both more frequent and more insidious than in the adult. "Whenever a young child is losing flesh, coughing a little, restless, sleeping badly, and perhaps sweating during the day and with such symptoms and no more (not even pyrexia always) a patch of dulness is found over the chest, you must proceed to find out what that patch means. It is probably an empyoemia. Commonly the needle will inform you but it may not and it will be necessary then to take other steps. The collection of pus being once opened you must re-sect the ribs until by the falling in of the chest-wall the cavity is abolished."

*Dr. George Clinique
Chelmsford Hospital
London.*

TREATMENT IN CHILDREN.

In children the treatment resolves itself into:-

- (a). Feeding of so great importance in the child.
- (b). Local measures to relieve pain.
- (c). Relief of extreme dyspnoea, prostration & collapse.

FEEDING.

Urgent dyspnoea and obstruction of the child's nasal passages prevent sucking. Give milk or cream in barley water with a few drops of the saccharated solution of lime. The mother's milk may be given in a teaspoon. If cows milk is not borne give peptonized milk or raw meat juice with cream. * Cotton wool is the lightest and best ^{form of} wrapping for the chest. If by restlessness and moaning the child shows signs of pleuritic pain a linseed meal poultice sprinkled over with mustard will give relief. It is a good plan to apply one good poultice late in the day, allow it to remain ten minutes or so, wipe the chest thoroughly dry and apply cotton wool. This will frequently assure an hour or two of sleep or at least diminish suffering.

It is of great importance - even more than in the case of the adult - that the room should be of equable temperature and from 55°F to 60°F. is the best. When the cough is troublesome the air should be maintained by steam which in many cases is the best means of warming the room. Among the poor and in isolated country districts a bronchitis kettle is often unob-

* "Garnage - Lissac" is the best form in which to use the cotton-wool.

ainable but by repeatedly pouring water from a height into some vessel the air can be well moistened.

DYSPNOEA.

In dyspnoea hot dry applications (flannel heated in an oven) are recommended, but in extreme dyspnoea leeching with or without sponging with tepid water afterwards or the cold pack are the means more and more advocated.

"In young children shallow and ineffectual respirations may exceed 100 per minute. But such rate of breathing can not be maintained for any length of time without the lungs becoming engorged and in part collapsed. The condition is therefore to be regarded as tending toward death and must be combated without delay.----- In our opinion the treatment that most promotes recovery in this emergency is the free abstraction of blood and the best method of bleeding with children is by Leeches applied to the chest, the application to be followed, should the pyrexia exceed 103.5°F. by the wet pack or tepid sponging and in any case stimulants being freely given."

Plurge & Dupland

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Prof. Ozler puts all his typhoid cases in a

bath of 70°F. every third hour whenever the temperature exceeds 102°F. and out of a series of 200 cases had a mortality of 7.1% and out of another series of 80 cases only 6.5%. But cold baths are unsuited to children and besides are not necessary.

Lancet.

Nov. 17. 1894.

WET COMPRESSES

"Of wet compresses applied to the chest there is much to be said especially in broncho-pneumonia. A napkin or towel is dipped in water, wrung out and lightly applied round the chest and covered over with a layer of cotton wool. The application is changed more or less often according to the number of respirations and the temperature of the child. Its chief use seems to consist in the deep inspirations which each application occasions."

Sturges & Dupland

Page. 255.

The delirious child must be carefully nursed and watched and if the delirium is associated with a high temperature occasional sponging will relieve both symptoms.

QUININE.

Of all the antipyretic drugs quinine is the

only safe one for children. Antipyrine, a favourite with many, is dangerous and in doubtful cases so affects the temperature as to make the diagnosis difficult and in other cases makes the prognosis obscure.

ALCOHOL.

"In extreme prostration alcohol is not so valuable as in adults, it must be used cautiously and not continuously. In infants not more than a few minims of brandy can with safety be given for a dose, to be repeated at short intervals over a limited time watching its effect by the index of respirations, pulse and state of consciousness after each administration. The drowsiness so characteristic of the affection warns us to dispense with it as far as possible."

In lobar pneumonia if, as rarely happens, it should not be complicated with bronchitis drugs are of little use. Should the early symptoms be very violent and the attack a sthenic one small doses of the tincture of aconite may be given with liquor ammonia acetatis. Children appear to stand aconite bet-

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Page 254.

ter than adults.

In broncho-pneumonia where the respiratory apparatus is clogged with accumulated secretion and in lobar pneumonia complicated with bronchitis a mixture containing liquor ammoniacacetatis, vinum ipecacuanhoe, spirit. ammoniac Co, and spirit chloroformi will be of service by liquifying the mucus and rendering its expulsion easier. If the child can stand it, an emetic dose of vinum ipecacuanhoe will relieve the distress by emptying the trachea and bronchial tubes but it must be repeated with caution.

Dr J. C. Kerr during eleven years while practising in a damp low-lying West Lancashire district treated a very large number of children suffering from broncho-pneumonia and having tried many methods of treatment obtained the best results by sodii-salicylas in grs II to grs V doses according to the age, with ipecacuanha wine in emetic doses every two hours.

Lancet. Mar. 3.

1894

"The salicylate of soda reduces the temperature and I believe cures the disease, the emetic doses of ipecacuanha wine are necessary to clear the lungs of mucous and so prevent death by suffocation. After the crisis on the eighth day there is frequently a

necessity for a change of treatment in those cases where there is much phlegm and to those patients I give dilute sulphuric acid with ipecacacuanha wine."

OXYGEN.

In severe cases of catarrhal pneumonia in children oxygen has proved of great value as the following case illustrates:-

"I was called to see a child aged 13 months on February 23/95. He had been suffering from cough and feverishness for four or five days previously and now had the usual signs of acute catarrhal pneumonia. The temperature was 103°F. He went on favourably for three days, but then developed worse symptoms, had cyanotic turns with very rapid breathing; and on the evening of March 1st he appeared, so the mother said, to faint and became livid. The temperature rose rapidly and by 9 p.m. was 105°F. He seemed to be getting rapidly worse and was very cyanotic. I sent for oxygen as it seemed the only chance of tiding him over the crisis. It could not be obtained before morning; and meanwhile the child passed a very restless night with a temperature slightly over 105°F. and great difficulty in breathing; the pulse could not be counted and the urine was very scanty.

By the morning of March 2nd the child was rapidly sinking, quite collapsed and cyanotic. Unless the oxygen worked wonders I could see no chance of recovery. It arrived at 10 a.m. and was at once applied in a gentle stream to the mouth and nostrils. The pulse soon showed signs of increased force and steadiness. Before two hours application had elapsed the child was breathing steadily, instead of the rapid and intermittent respirations, the pulse was steadier (I made it 140), the temperature was still between 104 and 105°F. and he lay quite still with half-closed eyes.

Brit. Med. Journal
May 11. 1895

The oxygen was now applied at intervals when any collapse seemed imminent. Before long the child could look up, the pulse was very irregular, sometimes 130, sometimes quite beyond counting. He now took a spoonful of milk and brandy and before 2 p.m. had taken almost half a cup of warm milk and a teaspoonful of brandy. When the oxygen was removed for any time he seemed to fall back into the collapse. It was now administered every hour and whenever the pulse wavered, and was continued for about ten minutes at a time. At 3 p.m. he took a small quantity of beef soup and a little more milk and brandy later on. The treatment was kept up all night and at hourly intervals all the next day. The child began to look about and would swallow the food given. The pulse now kept about 130 and the temperature fell to 103°F., the cyanosis had quite gone and there seemed a good hope of recovery. The oxygen was continued at hourly intervals and when weak for a day longer, then only when the pulse was weak and signs of cyanosis came on. The father was able to give me excellent help and could judge the signs and apply the oxygen when required. On March 6th tonsillitis inflammation set in and he refused all food. The temperature which had fallen to 102°F. rose to 103.5°F. He did not however relapse much, inhalations of steam and turpentine were used, and by the next day he took food well. The oxygen was now discontinued altogether, the chest was clearing up, and on March 7th when I called the child was playing with a toy and seemed rapidly improving."

-----ooOoo-----

THE USE OF COLDAPPLICATIONS TO THE CHEST.

In the foregoing account of the treatment of pneumonia little has been said concerning the external application of cold, whether by the cold bath, cold compresses applied to the chest, the ice pack, or the more recent ice-bag. At the present moment the method of treating acute inflammatory conditions is passing through a glacial period of extreme severity and the ice treatment in pneumonia claims special consideration. The practice has been most extensively carried on in Germany and America, indeed it was first advocated in the former country by Niemeyer.

"I have made extensive employment of cold in the treatment of pneumonia, and relying upon a large number of favourable results can recommend this procedure. In all cases I cover the chest of the patient and the affected side in particular with cloths which have been dipped in cold water and well rung out. The compress must be repeated every five minutes. Unpleasant as this procedure is in almost

Text-book

of

Practical Medicine

Niemeyer. Page 185.

all cases, yet even after a few hours the patients assure me that they feel a material relief. The pain, the dyspnoea, and often the frequency of the pulse are reduced. Sometimes the temperature goes down an entire degree. My patients often retain this surprising condition of improvement throughout the entire duration of the attack, so that their outward symptoms would hardly lead one to imagine the grave internal disorder. The relatives of the patient too, who do not fail to perceive the improvement, now readily assist in the treatment to which they were at first opposed. In a few cases, and only in a few, the use of cold affords no relief, and the troublesome manipulations for its application increase the distress of the sufferers so much that they refuse to keep it up. In such cases I do not insist upon the further application of cold. In the hospital at Prague every pneumonia is treated with cold compresses, and according to the statement of Smoler it is exceptional for a patient not to feel material relief from this treatment. As however I have never succeeded in cutting short a pneumonia by means of cold applications I should only ascribe a palliative influence to their

use, had not the duration of the disease in many instances been decidedly shortened and the convalescence hastened by means of their energetic and methodical employment. In fact, in but a few cases have we seen the disease delay its departure until the seventh day. Many have improved on the fifth, and a very large number as early as the third day, nay, I have repeatedly found it impossible to keep patients with recent pneumonias in hospital for a longer period than a week."

THE ICE-BAG.

In America Prof. Mays has repeatedly advocated the use of the ice-bag in pneumonia. -----
 "I am able to approach a case of pneumonia with a greater degree of assurance - not with the feeling, however, that we possess a specific - but with the confidence that here we possess an agent with which we are able to suppress and circumvent the severity of the pneumonic process. I believe that cold properly applied will affect the death rate of pneumonia as profoundly as it has affected that of typhoid fever."

Medical News.

Sept. 24 1892

Jan. 21. 1893.

He believes that it not only lessens the

hyperoemia of a lung area which is about to be the seat of a pneumonic process, but that should the exudation have filled the alveoli it will undergo resolution as evidenced by the reappearance of the respiratory murmur, onset of crepitation and diminution of flatness. He also considers that "the pain, difficult respiration, cough and expectoration are remarkably relieved, the temperature is frequently depressed two or three degrees in the course of half a day." Fifty cases were collected which had been so treated and the mortality was 4%.

Dr Fiencht, a Finnish medical man, treated 106 cases of pneumonia with the ice-bag with a mortality of 3%. An india rubber bag containing ice was applied over the lung continuously for from 12 to 24 hours after the crisis and as regards general treatment, opium, ipecacuanha, digitalis, and brandy were given.

In this country Dr D. B. Lees has enthusiastically advocated the ice-bag. After reviewing 18 cases so treated by him and of which number none died he concludes -----"that the ice-bag applied over a pneumonic lung has a direct curative influence,

Lancet: Aug. 10. 1887

Lancet: Nov. 2. 1887

that it does not simply reduce the general temperature, but it distinctly tends to repress the inflammatory process in the lung with more or less success, according to the severity of the case and the height which the inflammation has already reached."

At the London meeting of the British Medical Association in 1895, Dr Lees claimed the following advantages for the ice bag in preference to any other means of applying cold locally.

(1). Relieves pain and is pleasant to the patient.

Cold is an anaesthetic and after the first few minutes is not usually objected to by the patient. The constrained position is sometimes complained of, but a little attention by the nurse will always obviate this.

(2). It dilates the superficial capillaries.

(3). It improves the local physical signs.

He has often found marked improvement in resonance over the area where the ice-bag has been applied even after 24 hours; bronchial breathing which was just commencing has disappeared, ^{*}Sharp crepitations become

^{*}Criticising this point Dr Powell states "it is a very common experience if it be not universal to observe that redux crepitation generally appears after the fourth or fifth day of consolidation, over a given area of lung quite apart from the activity of the disease, which may be manifesting itself by extending consolidation above or in the other lung.

moist, and scanty viscid sputum becomes copious and watery.

- (4). It lowers the temperature and (what is of greater importance) reduces the frequency of the pulse.
- (5). Causes sleep and secures a more rapid convalescence.

There is a great necessity of getting sleep during the first few nights by some means which will not cause cardiac depression and Dr Lees believes the ice-bag will do this. If this is not done there comes a time when the patient can't sleep and one is afraid to give him anything or to apply cold.

"Failure to obtain improvement by the use of ice is usually the result of too great timidity on the part of the physician. There is a question of dose involved, just as in the case of other drugs. No one would expect to cure malaria by a single grain of quinine or tertiary syphilis by two grains of Iodide, and in the discussion on the treatment of diphtheria great stress was laid on the necessity of a sufficient dose of antitoxine. Similarly with regard to the external use of ice. The lung is a large organ

and the ice-bag covers only a small area. Even in babies two ice-bags are often necessary. In adults three or four if the treatment is to be fairly tested. Further proof of the local influence of ice in repressing visceral inflammation may be easily obtained by observing the rapid cure which it effects in sciatica and the quick disappearance of a pericardial or pleural rub in cases treated by it.----- In the use of this treatment for young children certain precautions are advisable. Two hot water bottles should be placed in bed to keep the lower limbs and abdomen thoroughly warm. The temperature should be taken every half hour for the first three hours, then hourly. If any blueness of the hands or lips is noticed the ice should be removed for an hour, and afterward it should be applied for two or three hour periods with one or two hour intervals."

He does not advocate this treatment in the case of very feeble children, the aged, or in adynamic conditions generally. Dr Lees has the courage of his convictions and applied this treatment to his own child. He writes ---"He (the child) had suffered from catarrh for two or three days, when he rapidly became

Cancel: Nov. 2/1889.

acutely ill; the temperature ran up to 104°F. the breathing was very rapid and his lips began to look a little dusky. Just the faintest impairment of resonance was to be detected at the base of one lung. He passed a most restless night and in the morning was no better. Some ice was sent for and an ice-bag applied to the suspected area. Within twenty minutes of its application a distinct change for the better was observed. The breathing became much quieter. The temperature fell at once. In a few hours he was out of danger and in a day or two was quite well. I am convinced that an attack of broncho-pneumonia was cut short."

Sir Douglas Powell, who opened the discussion on the treatment of croupous-pneumonia by no means shared Dr Lees enthusiasm.

"The treatment of ice application which has been so strenuously and ably advocated by Dr Lees and has been advocated with more or less enthusiasm by many other physicians is still a vexed question.

An enquiry made at all the great London Hospitals elicits the fact that ice-bags are not largely used; that no special benefit upon the pneumonia has followed their use, their employment having

Powell.
Discussion
on Acute Pneumonia
Brit. Med. Meeting.
London. 1895.

been chiefly for the relief of pain and to lower pyrexia.

It seems, if I may venture to say so, that the ice-bag treatment of pneumonia has at once suffered and profited by its strenuous and perhaps too enthusiastic advocacy, and that what reputation it has gained has been more in the treatment of pneumonia of children than in adults and its efficacy must therefore be rather gauged by the average mortality of children from pneumonia.

The tendency is in hospital practice, and is becoming so in private practice to discard local applications in pneumonia, except for special reasons, and one strong argument in favour of their disuse is that their application involves more or less restraint and fatigue of the respiratory movements by the wrappings necessary to keep them in place. This especially applies to moist applications. Practical experience seems to go with theoretical knowledge in refusing any notable effect of ice applications upon the course of pneumonia, and my own prejudice is against them in ordinary cases on the ground that I have observed increased inflammatory lung infiltration.

tion following their use for haemoptysis and that they are harmful in bronchitis.

The following points are however distinctly in favour of their use in certain cases - namely in cases in which there is great local discomfort with restlessness and high temperature:-

- (1). In the presence of high temperature they produce no hurtful effects; whilst they have the good effect in many cases of reducing the temperature some one or two degrees.
- (2). In the presence of pain, especially of the less acute kind presumably due to general tumidity of a lung stretching its capsule they give comfort and relief.
- (3). The ice-bag of Lees can be applied without impeding chest movements.

The pain of pneumonia is due to one or two causes, either the overdistension of the capsule of the lungs from excessive swelling of the organ, analagous to the pain of hepatitis, or pleurisy analagous to perihepatitis. Ice-bags will relieve the first of them, I should myself generally prefer the free application of leeches.

The second is in my experience best relieved by the application of a blister for six or eight hours with five or six hot linseed poultices applied over it in quick succession so as to make it rise quickly and well. In children however care should be taken with the use of blisters and poultices alone or the ice-bag should replace them. Leeches are sometimes valuable and a small subcutaneous injection of morphia may be used to relieve the immediate suffering after the cause has been allayed by the local remedy."

THE ICE-BAG & CARDIAC COLLAPSE

The fear of cardiac collapse has greatly militated against the acceptance of the ice treatment, but neither Prof. Mays or Dr Lees have ever seen any harm result from the application of the ice-bag. In 1891 Dr W. Soltau Fenwick published a most valuable analysis of the treatment and results of 1000 consecutive cases of acute pneumonia treated at the London Hospital. On the whole he is favourable to the use of cold applications to the chest, but only in suitable cases and considers the dangers attending their use have been exaggerated.

Lancet:

July 8. 1893

Nov. 2 1889.

Lancet. Jan 31 1891.

7 Feb. 7 1891.

"It is an important question whether any bad results have occurred from the use of cold as a therapeutic agent in the treatment of pneumonia. The following facts may help us to frame a satisfactory answer.

In six cases of the 1000 treated the patient suffered from a second attack of the disease during the period of his convalescence, only one case occurring amongst those who were treated by the application of cold, the other five being subjects under the poultice and quinine régime."

APPLICATION OF ICE & ALBUMINURIA.

"It has been stated that the application of cold is apt to induce the condition of albuminuria in these cases, but I have been unable to discover among my 101 cases (treated by the application of cold externally) a single instance in which albumin to the amount of $\frac{1}{7}$ was observed in the urine after the crisis of the disease. On the other hand the reduction of temperature seemed not unfrequently to excite renal secretion, the diuretic effect of sponging being particularly marked. Again five cases of gangrene of the lung are recorded among the 522 cases treated

by poultices, while only one case is to be found in the antipyretic series. In a few cases treated by the ice cradle or sponging pleuritic pain was complained of after the crisis. Such a symptom would probably be ascribed by opponents of the method to its injurious influence, but this can hardly be so. Nearly every case of acute pneumonia is accompanied by localised pleurisy and since we know that pleuritic effusion is but slowly absorbed in the presence of fever I would rather ascribe the symptom and the slight rise of temperature which accompanies it to the result of a premature absorption of the exudation consequent upon artificial reduction of temperature. The symptom is one that can easily be subdued by the application of strapping to the affected area of the chest, or by the subcutaneous injection of antipyrine. For this reason I do not hesitate to assert that the injurious results of the application of cold in acute sthenic pneumonia are inappreciable and may well be ignored when the great value of the treatment is taken into consideration. For among 108 cases in which this method was systematically carried out we find a percentage mortality of only 10 instead of 23."

The writer discusses the application of the antipyretic method of treatment under the following headings;-

- (a). The ice-bag.
- (b). The cold pack.
- (c). Sponging.
- (d). The ice-cradle.

The use of the cold bath is not considered of sufficient importance for discussion and apparently was never used.

THE ICE-BAG.

"The ice bag was introduced into the London Hospital as a substitute for the poultice in the treatment of cases belonging to the sthenic type. As in the case of every other innovation in the practice of medicine many objections have been urged against the application of an ice-bag over the consolidated lung and it would seem as if its most ardent advocates by not insisting sufficiently upon the class of cases in which the ice-bag can be used with success and also perhaps by a tendency to somewhat overestimate the real value of the procedure have unconsciously enabled these objections to exert an

an undue influence on public opinion. I think however that everybody who has had much experience in the use of the method will admit the truth of the following statement:-

CASES SUITED FOR THE ICE-BAG TREATMENT.

First that it is in the acute sthenic cases and in these alone that the ice-bag can be applied with any hope of success and that these cases which belong to the secondary or asthenic variety of the disease are not only totally unfitted for but actually affected injuriously by its application.

Secondly that many patients exhibit a marked idiosyncrasy with respect to the local application of cold and in these cases, however suitable they appear, the ice-bag proves absolutely intolerable and should therefore be at once removed.

Lastly when the individual peculiarities of the case have been inquired into and respected the ice-bag proves itself of singular efficacy and not only is the phantom failure of the heart conspicuous by its absence, but in the majority the heart's action becomes actually stronger and the general con-

dition of the patient undergoes considerable improvement. The antipyretic value of the ice-bag is uncertain. In the broncho-pneumonia of children a fall of temperature certainly does follow its use, but in cases of acute pneumonia I have never been able to detect any decided or constant effect as the result of its application----- The value of the ice-bag therefore may be summarised as follows:- As a local application in some sthenic cases it proves itself of more practical value than the linseed poultice, the pleuritic pain being relieved while at the same time the general condition of the patient undergoes improvement. Its manipulation is simple and by its lesser weight it does not tend to hamper the movements of the chest like a jacket-poultice. As a general antipyretic remedy its value is inconsiderable. The mortality attending its use is probably lower than that which results from the previously described methods of treatment.

- *1. Cases treated by hot poultices to the chest and the internal administration of various tonic and expectorant remedies.
2. Cases whose medicinal treatment consisted entirely of quinine in large doses.

THE WET PACK.

The wet pack Dr Fenwick regards as inferior to other, antipyretic methods, but under special conditions it is of the greatest practical utility.

"-----the method possesses certain special properties which render it of great practical value.

Not only does it prove agreeable to the patient, but also tends to soothe the form of mental irritability which is often so marked a feature in cases of acute pneumonia, and it is constantly found that a patient who has experienced no rest for several days will fall into a refreshing sleep soon after he has been enveloped in his first pack. In addition to this the wet pack is sometimes of use in limiting the muscular movements in those cases where violent delirium is a prominent feature, and thus preventing to a certain extent the unnecessary exhaustion which would otherwise ensue. It is for these reasons that the wet pack although in itself of limited utility proves itself of such value when used as an adjunct to the more powerful measures subserving temperature reduction."

TEPID SPONGING.

Sponging with tepid water (at about 116°F.) has always been a favourite procedure with medical men in this country and particularly those engaged in private practice. It causes little fuss and is not objected to by the patient or relatives. It is of advantage to add a little eau de Cologne to the water.

Dr Fenwick makes some definite statements concerning it which are of ^{the} greatest practical value. By experience water at a temperature of 116°F. is found not only to be more agreeable to the patient, but actually more effective in reducing the temperature. As a rule he found that active sponging would reduce the temperature of a case of acute pneumonia about two degrees, but within one hour the temperature of the patient would be at the same level again. Consequently it is imperative that the patient be sponged every hour at least.

Those cases whose temperature responded readily to these means were favourable and usually did well; whereas the cases whose temperatures were stubborn and difficult to reduce by the sponging usually did badly.

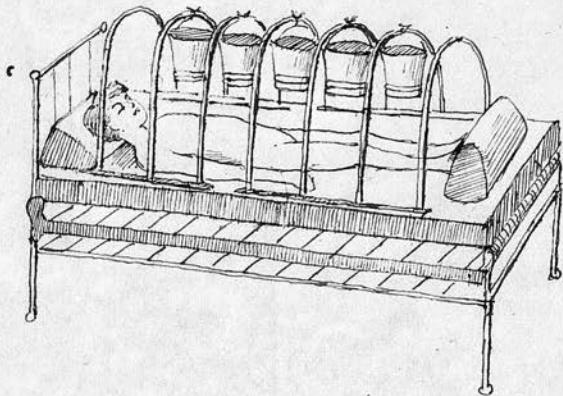
"During the last ten years 65 cases of acute pneumonia had been treated upon this principle, the result being as follows:-

In 25 cases the average temperature was 103" to 104" F., and 12% (i.e. 3) died.

In 33 cases the average temperature was 104" to 105" F., and of these 12.2% (i.e. 4) died.

In 7 cases the average temperature exceeded 105" F. and of these 14.3% died (i.e. one).

Stimulants were administered in 33 cases the majority receiving medicinal treatment in the form of a mixture containing ether and ammonia. No deaths occurred at the crisis. Thus we find that in 65 cases treated upon general principles, subserving the economy of the cardiac force and in which the average temperature exceeded 103" F the mortality attending the disease only amounted to 12.8% - a reduction to the extent of almost one half."



ICE-CRADLING.

Ice-cradling, a convenient method of applying cold long used at the London Hospital, has been adopted in pneumonia. Dr Samuel Fenwick first introduced it as a substitute for the cold bath in the treatment of typhoid fever and has been for many years so used by him with excellent results.

The patient, nude or only covered with a cotton night dress or opaque gauze sheet is placed in bed with a sheet covering the mattress. Two large cradles (usually surgical) are arranged, one extending from the shoulders to the hips and the other, from the hips to the feet. In the arches of the cradles six or eight small zinc pails $\frac{1}{2}$ filled with ice are suspended. A hot water bottle is kept in contact with the patient's feet. The pails should be covered with flannel or moisture will condense on the pails and fall upon the patient. Instead of the pails when the patient is very restless india-rubber bags may be used and when these cannot be obtained I have used sheep's-bladders (sheep's-stomachs) which can always be obtained from a butcher. It is found that the ice melts in the pails in about two or three hours time

and then requires to be renewed. Both the cradles are first covered with a blanket secondly with a waterproof and lastly with the ordinary coverlet.

"Under such an arrangement the patient may lie for many days (in fact the treatment is maintained until the temperature becomes normal. All that is required is to renew the ice in the pails whenever it melts and occasionally to refill the hot water bottles for the feet. Although the mean temperature of the air under cradle can rarely be reduced more than a degree or two below that of the surrounding atmosphere, it usually suffices to effect a reduction of several degrees in the bodily temperature, and what is of more importance to retain it at a reduced point. In certain cases where the pyrexia has been moderate or where ice was unobtainable the cradle has been used without the pails and under such circumstances it has been found that the circulation of the air at the temperature of the ward sufficient to effect a gradual reduction of the temperature of the body to the extent of several degrees."

To obtain the maximum value from the use of the ice cradle the following conditions are necessary.

- (1). The cradle must be of sufficient width not to cramp the movements of the patient's limbs, or he will not stand it.
- (2). The feet must be kept warm by hot-water bottles.
- (3). The air must circulate freely under the cradles, otherwise the ice melts too quickly, consequently the temperature of the air under the cradles rises and the whole thing fails.
- (4). The temperature of the patient ought to be taken every three or four hours, and should it have fallen below 100°F. the cradle must be removed. Also should the patient shiver it ought to be taken once taken away.

The object is to maintain the bodily temperature below 103°F. Should the temperature be 103°F or more the cradle is applied and maintained in situ until it falls to 100°F. when it is ~~again~~ removed, to be again applied, however, should the temperature again rise to 103°F., and so on to the end of the case.

Severe cases of typhoid in Dr S. Fenwick's wards have lain ten days or a fortnight under the cradle.

ICE-CRADLING & TEPID SPONGING IN SEVERE CASES.

"In some cases in which the pyrexia is exceedingly severe the ice-cradling proves to be insufficient for the immediate reduction of temperature; and it has therefore become our custom to supplement its action by the employment of such adjunctory measures as sponging or ice-packing. Not only does the act of sponging excite the skin to the performance of its normal functions, but the sudden slight reduction of temperature it entails seems to provide the necessary impetus to the action of the cradle, and we accordingly find that a stubborn temperature will often begin to give way after the patient has once been sponged with hot water.

D. W. S. Fenwick

During the last 18 months 43 cases of acute sthenic pneumonia have been treated with the ice-cradle, with the following results:-

In 15 cases the average temperature amounted to 103°F to 104°F., and one died. (6.6%)

In 25 cases the average temperature amounted to 104°F to 105°F., and two died (8%).

In 3 cases the average temperature exceeded 106°F and none died.

In no case did death occur at the crisis and the total percentage mortality was 7.

The internal remedies usually consisted of some preparation containing quinine and ammonia. The greatest attention was paid to the functional condition of the heart, particularly at the time when the temperature spontaneously fell to normal, and any tendency to cardiac failure was promptly combated by the administration of alcohol or by the hypodermic use of camphor. I may also add that it has lately become our custom to resort to systematic sponging of the body in addition to the use of the cradle in all cases."

In private practice the application of ice to the chest externally, a procedure so subversive of old-fashioned ideas meets with much opposition and the practitioner should bear in mind that should the patient subsequently die ^{the treatment} may be unjustly blamed.

Amongst the poor the want of efficient nursing makes such procedure very anxious for the doctor and risky for the patient.

Of the different methods, ice cradling which reduces the temperature more slowly than the ice-pack, ice-bag or other agents, and being more under control

is the best procedure when distance or amateur nursing are conditions to be reckoned with.

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