

widely different conditions as, for example, hæmophilia and tuberculous caseation of lung or other tissue. But it is not impossible that there is a common basis of autolysis in these and in a vast number of other conditions characterised by destruction of epithelial, endothelial, hæmic, or other cell, and that such autolysis can be inhibited by normal serum. It appears from the results that I have obtained by the oral administration of serum that subcutaneous or intravenous injections are not at all necessary. I found at the same time that T.R. tuberculin and antistaphylococcal vaccines and other vaccines may be given in the same way, and apparently the clinical results are in no way impaired. This will of course require confirmation. Since writing this paper I learn that in Australia a number of diseases have been treated by Dr. Montgomerie Paton with antidiphtheritic and other serums administered by the mouth. The cases he has published seem to confirm amply the value of normal serum-therapy that I have independently arrived at.

Harley-street, W.

PLASTIC BRONCHITIS

IN A GIRL, AGED 11 YEARS, THE SEVENTH ATTACK
IN FOUR YEARS, THE FIRST OCCURRING AT
THE AGE OF SEVEN YEARS:

EXTREME DISPLACEMENT OF THE HEART AND
MEDIASTINUM, PRODUCED BY COLLAPSE
OF THE LUNG, DISAPPEARING WITH
EXPECTORATION OF THE CAST, BUT
RECURRING AS EACH FRESH
CAST FORMED.

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A GIRL, aged 11 years, was admitted into St. Bartholomew's Hospital with plastic bronchitis. The first attack was at the age of seven years; since then she had had six attacks, this being the seventh. She had been in this hospital for the previous three attacks. The present attack began on Jan. 14th, 1907, with headache and cough. On the 15th she was at school, but on the 16th she was too unwell to leave bed. She had slept badly, had much headache, vomited several times, complained of a "lump in the throat," and brought up some blood-stained sputum. The patient was a well-developed child, but she looked ill, was somewhat dusky, had a tight cough, and expectorated a little blood-streaked sputum. The temperature was 99° F., the pulse

of the heart to the opposite side; on the contrary, the apex beat was an inch to the left of the left nipple line in the fifth space and the resonance of the right lung extended across the sternum and reached an inch to the left of the edge of the sternum along the third rib. Corresponding with this the respiratory sounds changed from the somewhat exaggerated sounds of the right lung to the defective sounds of the left. It was evident that the left lung was contracted and the right expanded. This was thought to be due to collapse of the left lung consequent on the occlusion of the left main bronchus by a cast. On Jan. 18th the condition was much the same but the breath was shorter and the duskiess more marked. On the 19th, at 4 A.M., a large

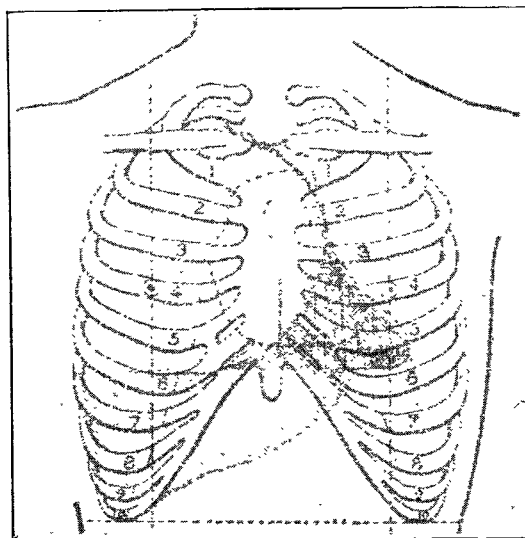


Diagram showing the displacement of organs before the expulsion of the cast.

cast was coughed up two and a half inches long and the stem was nearly one-third of an inch in diameter. It was brought up after much coughing and great distress. The temperature the evening before reached 103° but on the morning after the cast had been expectorated it fell to 99·8°. On the 20th several more pieces of casts of smaller size were brought up along with some muco-purulent sputum. The apex of the heart returned to the left nipple line—i.e., moved two inches towards its proper place. The upper part of the left lung became resonant and the breath sounds there distinct and

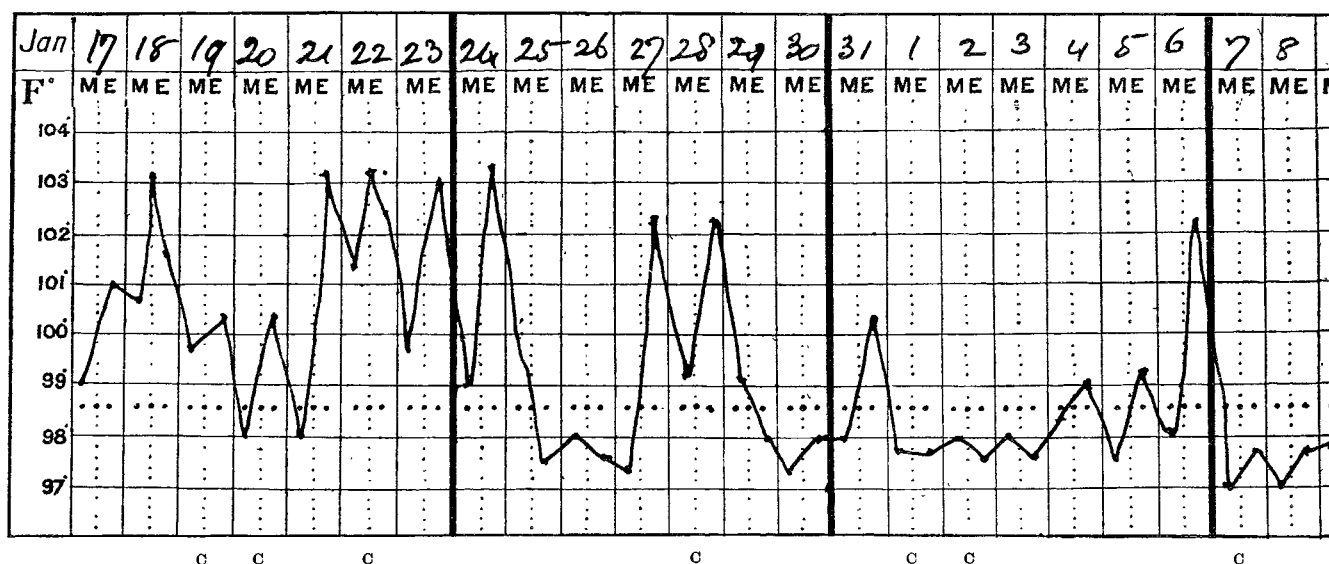


Chart of temperature between Jan. 17th and Feb. 8th. On the dates indicated below by the letter c casts were expectorated.

was 140, and the respirations were 36. She complained of feeling a "lump in the chest" in the upper part of the left side in front. The percussion note was greatly impaired over the whole left side, back and front, and at the base behind was almost dull. The vocal resonance and breath-sounds were absent everywhere except in the left interscapular space, where they were somewhat exaggerated. The stony dullness here almost suggested fluid, but there was no displacement

accompanied with a little crepitation. The base behind, however, continued *in statu quo* with dullness to percussion and absent breath sounds. The patient was now placed upon ten grains of iodide of potassium three times a day. Gradually the physical signs became much as they were on admission, and the heart's apex returned to its former place outside the left nipple line. The patient became more dusky and drowsy, and on the evening of the 22nd she brought up

another cast as large as the first and a good deal of mucopurulent expectoration. The apex immediately returned nearly to its former position and was felt half an inch inside the left nipple line. As before, the whole left side became resonant, vocal resonance returned, the breath sounds became audible, and were accompanied with some rhonchus and crepitation. At the base behind, as before, there was still some dulness and the voice and breath sounds remained absent. The child was greatly relieved and slept peacefully afterwards for some time. In the course of the next few days the same series of events recurred, the heart gradually passed out again, dyspnoea and dusky skin recurred, until on the 28th another cast of the same size and character as the others was coughed up with similar relief to the patient and with the return of the heart to its normal position. However, a few hours later it was evident that another cast was forming with considerable rapidity, for the heart was moving outwards again and the other physical signs were returning, and at midday on Feb. 1st another large cast appeared. On the 3rd several small casts were coughed up and on the 7th a large one, each event being accompanied by the same changes in physical signs as have been described. Up to this time the temperature had been very unstable, rising frequently to 103° and being generally at its highest just before the cast was expectorated. From the 7th convalescence proceeded without interruption. The temperature remained normal or subnormal. The heart continued in its normal place and the patient looked well. She was kept in the hospital for some time largely as a matter of charity and was discharged on May 7th perfectly well, with the heart and lungs in their normal position and without any physical signs in the chest. The casts were examined microscopically and bacteriologically but without any positive result.

The case is an ordinary one of plastic bronchitis and except for the size of the casts does not present any remarkable features. The point of interest is the *displacement of the heart and complementary dilatation of the opposite lung* which followed on the collapse of the affected lung, changes which could hardly have been greater with pneumothorax of the right side. I have once before observed this in a case of extensive broncho-pneumonia of the left lung in a small child, the apex beating half an inch outside the left nipple line and returning to its normal place as the collapse passed off. I have not met with any account of a similar case to the present, which therefore seems worth recording. Some considerations of physiological interest arise out of it. The processes by which the air is absorbed from the air vesicles on collapse or from the pleura in pneumothorax are not fully understood. So far as the O and CO₂ are concerned, these gases exist in the blood partly in solution and partly in loose chemical combination. So that we may fairly suppose that they are removed in these ways. The N presents greater difficulties, being so inert a chemical body. Yet it, too, is removed and often with considerable rapidity.

The forces under which the gases are removed are greater than the elasticity of the lung—i.e., 6–8 millimetres of Hg—otherwise there would be a tendency for air to collect spontaneously in the pleura, and this does not occur. But this case shows that the forces must be much greater than this, for they were sufficient to cause the opposite lung to expand to the maximum. No doubt the violent coughing increased the forces of expiration very considerably and thus favoured absorption during the time of coughing, but in the intervals between the attack of coughing the forces at work would have to be equal to the elastic tension of the lung in its condition of exaggerated stretching, which can hardly be less than 10 millimetres of Hg or 5 inches of water and is probably more, and it must be against this resistance at least that absorption of the air took place.

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AN ARTIFICIAL "AIR-WAY" FOR USE DURING ANÆSTHETISATION.

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ON several previous occasions, not only in the columns of THE LANCET but elsewhere, I have endeavoured to establish the proposition that in most of the cases in which difficulties arise during general anæsthesia these difficulties are directly dependent upon mechanically obstructed breathing and that this condition, occurring as an incident, introduces into administrations an auto-asphyxial element the true nature of which is frequently misunderstood. It has been pointed out that whilst there are many different varieties of mechanically obstructed breathing—i.e., many different ways in which the respiratory pump may be thrown out of gear independently of any defect in the nerve energy at its disposal—these varieties are capable of being arranged in two main groups. In Group 1 we have obstructive states dependent upon the operation of causes *within* the upper air-passages, and in Group 2 we have obstructive states dependent upon the operation of causes *external* to those passages. As an example of obstructed breathing of the former kind may be mentioned that arising from altered position, spasm, or swelling of the tongue. As an illustration of mechanically impeded breathing of the latter kind, that dependent upon spasm of the external respiratory muscles may be cited. On the present occasion I propose to deal only with the treatment of certain of the obstructive conditions of the first of these two groups and to confine my remarks to cases in which the respiration of semi-anæsthetised or anæsthetised patients becomes partially or completely obstructed owing to occlusion of the air-tract *above the larynx*.

Were it customary, as in physiological experiments, to introduce anæsthetic gases and vapours into the pulmonary passages through a tracheal cannula the text-book descriptions of the clinical phenomena of incipient and complete general surgical anæsthesia would markedly differ from those with which we are now familiar. Under such circumstances we should obtain far more equable results in our administrations and there would be much less intercurrent respiratory disturbance. But as it is necessary in surgical practice to introduce anæsthetics through the ever-varying nasal and oral passages this smoothness in anæsthetisation cannot be depended upon. The upper air-passages of all subjects are liable to alterations in their conformation and calibre during general anæsthesia. This is specially noticeable in certain subjects, e.g., the thick-set and plethoric, whose upper air-passages are naturally narrow; in certain postures, e.g., the Trendelenburg, in which the tongue gravitates towards the palate; and in certain operations, e.g., rectal, which have a tendency reflexly to produce spasmodic tongue retraction. Everyone who has paid much attention to the clinical aspects of general anæsthesia knows how frequently he has to adopt some means for preserving a free air-way. In some cases the jaw must be pressed forwards or the chin pulled up continuously; in others, a mouth-prop adjusted to meet the special peculiarities of the case is required; whilst in others again it is necessary to apply tongue forceps in order to insure free breathing.

The question here presents itself: Should anæsthetic gases and vapours be administered through the oral or through the nasal passages? It is interesting that the natural tendency towards nasal as opposed to oral respiration persists in a marked and often in an inconvenient degree during general anæsthesia. Even though a patient, obeying instructions, commence to breathe orally he will tend, as anæsthesia deepens, towards purely nasal respiration, and this nasal respiration frequently proves inadequate. Whilst nasal breathing is undoubtedly of paramount importance in everyday life it is, as a rule, inferior to oral breathing during the induction and maintenance of general anæsthesia. Suffocative sensations during induction are generally due to nasal respiration, the nasal passages being of insufficient calibre to allow of that quantity of oxygen reaching the lungs per minute which is essential to full blood oxygenation, and hence to the patient's comfort during incipient anæsthesia. It is true that when anæsthesia has become established nasal respiration may

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—A quarterly meeting of the Royal College of Physicians of Edinburgh was held on Feb. 4th, Dr. C. E. Underhill, the President, being in the chair. Theodore Charles MacKenzie, M.B. Edin., F.R.C.P. Edin., was introduced and took his seat as a Fellow of the College. Patrick Hehir, M.D. Brux., M.R.C.P. Edin., Lansdowne, India; and Harold Sherman Ballantyne, M.B., C.M. Edin., M.R.C.P. Edin., Dalkeith, were admitted by ballot to the Fellowship of the College. Lindsay Stephen Milne, M.B., Ch.B. Edin., Montrose, was admitted by ballot to the Membership of the College after examination. The Registrar reported that since the last quarterly meeting 27 persons had obtained the Licence of the College by examination.