breathing vigorously, but there is abundance of air in the bag and he can take a full breath without emptying it.

Using ethyl chloride alone we can safely push the anaesthetic till we have the usual signs—fixed eyeballs, dilated pupils, and insensitive corneae—before removing the face-piece, and a good minute and a half or more of satisfactory anaesthesia without trace of cyanosis will be obtained. Using it in sequence with ether a profound ethyl chloride effect is not desirable, and as soon as unconsciousness is produced ether vapour may be pumped into the bag by means of the hand belows. The strength of ether vapour can be varied within any limits by varying the degree of vigour of pumping and by the admission of more or less air at the face-piece. The apparatus is very economical as regards amount of ether used, a certain amount of rebreathing being involved, and, if desired, a much stronger vapour can be obtained than by using a Clover.

I contend that the method is a safe and highly satisfactory one for the induction of anaesthesia, especially for the difficult type of patient under consideration, and it is also a satisfactory apparatus to use in maintaining anaesthesia in the large majority of operations in a camp hospital.

I think that most administrators will agree that quick inductions and closed inhalers tend to be associated with vigorous respiratory movements. In abdominal cases I therefore prefer a slow induction with chloroform and an open mask, changing to ether and an ether mask and the drop method before the dangerous period of excitement supervenes. Fortunately abdominal cases rarely come to operation while yet in a state of youthful vigour, and thus do not present the difficulties I have been discussing. In conclusion, I am convinced that the previous hypodermic administration of  $\frac{1}{2}$  gr. morphine and  $\frac{1}{100}$  gr. attropine is of considerable value. The hypodermic should be given no matter how trivial the operation may be.

Occasionally the nature of the operation demands the use of chloroform, but after the induction period is over and full narcosis has been produced these young soldiers take chloroform well.

## Memoranda: MEDICAL, SURGICAL, OBSTETRICAL.

# AN APPARATUS TO FACILITATE THOMAS'S SUCTION TREATMENT.

MEMBERS of the profession who use dry cupping as recommended by Hugh Owen Thomas (of Thomas's splint fame), whose ideas have been appropriated and elaborated by the German Dr. Biers (a name we have too long permitted to eclipse that of the originator of the method), may be glad to hear of an apparatus I have invented that not only greatly reduces the physical work entailed in working an air pump in the usual way with both hands, but frees one hand, which can be employed in adjusting the cup to the part operated on.

As seen by the illustration, the apparatus consists of a wheel, A, 18 in. in diameter, moving in a vertical plane with



a crank axle that moves a vertical rod, B, up and down. a crank axis that moves a vertical rod, B, up and down. The latter moves the lever c, which rotates on the pivot D. The piston E of the air pump F (which is fixed rigidly in the clamp G) is attached to the end of the lever c, and is moved up and down by the latter. The wheel is kept in motion by the hand at handle H. A pedal can easily be fixed and the movement maintained by that means. A cup, I, is attached by stout indiarubber tubing to the nozzle of the air pump. The apparatus (without the pump) may be obtained from Mr. T. Pottinger, Markham Road, Winton, Bournemouth.

Thomas's method used in this powerful way has been found to be of the utmost use in relieving pain due to locally inflamed areas, lumbago, sciatic pain, spinal irritation. Its use is suggested in a great number of ailments, amongst others, those in which the stage for surgical depletion has not been reached. Bournemouth.

W. JOHNSON SMYTH, M.D.

### WHOOPING-COUGH AND LYMPHAEMIA.

MANY observers have established the fact that in whooping. cough during the convulsive stage a considerable lympho-cytosis is practically constant. Dr. Gordon Ward (*Clinical Haematology*, p. 53) states that he has "seen lymphaemia follow an attack of whooping-cough, but there is little evidence to suggest that this was more than a coincidence." It seems to me the following cases suggest that it may have been more than a coincidence.

### CASE I.

CASE I. A healthy boy, 3½ years old, had whooping-cough for about a week. Examination of films showed 75 per cent. of lympho-cytes, 5 of mononuclears, 1.5 of eosinophils, and 18.5 of poly-morphs. General survey of a film revealed considerable in-crease of white cells. (No total count was made, but a few days later this was 26,600.) The lymphoid cells were abnormal in four respects: (1) There was a considerable proportion of small forms which were naked

The lymphoid cells were abnormal in four respects: (1) There was a considerable proportion of small forms which were naked nuclei, and some of these were even deformed and dwarf. (2) Cells otherwise like small lymphocytes showed hour glass, deeply incised, and elongated, bent and twisted nuclei (Rieder forms). (3) A few showed distinctly divided nucleus—twin nuclei. (4) Of the total whites, 2 per cent. were in plasma cell form form.

A fairly healthy girl, aged 2½ months, had moderate whooping-cough for a month. The film had 65 per cent. of lympho-cytes, 12 of mononuclears, 1 of eosinophils, and 22 of poly-morphs. In the films were seen several lymphocytes and mononuclears and a few large lymphoid cells, each with two nuclei. A general survey revealed a few polychromatic reds but did not suggest great increase of whites. A week later films were taken, and in counting 200 whites there were seen four mononuclears with twin nuclei. In the same film was seen one in which the nucleus had divided into two equal parts, and then one of these apparently had also divided into two. A large lymphoid cell with a fair envelope of hya-line cytoplasm showed two distinct well stained oval nuclei. The differential count gave 45 per cent. of lymphocytes, 27.5 of mononuclears, 1 of eosinophils, 26 of polymorphs, and 0.5 of myelocytes. myelocytes.

These are not the only cases in which I have seen similar forms.

The points of difference from an established lymphaemia are obvious, but in an early stage of lymphaemia we know little about the blood. We do know, however, that in acute little about the blood. We do know, however, that in acute lymphaemia the white count need not exceed 20,000. Pappenheim has said (*Clinical Examination of the Blood*, 1914, p. 36): "There is this further point of difference, never observed in the leucocytoses, that various atypical forms of cell are met with. Further, mitoses are frequently observed in the leukaemias, but never in the leucocytoses. Above all, in addition to amitotic cell division occurring in lymphatic leukaemias, the Rieder type of lymphocyte may be seen." And Dr. Gordon Ward (op. cit., p. 63) writes: "If a cell other than a nucleated red is found in any film to be undergoing mitosis there can be no doubt that a case of leukaemia is being dealt with."

My cases prove that neither mitoses nor atypical cells (naked, dwarf, deformed, plasma cell, Rieder forms), and not even a liberal combination of both, are incompatible with simple lymphocytosis. But my point is that, with with simple lymphocytosis. But my point is that, with 80 per cent. of lymphoid cells and plenty of atypical and mitosing cells, whooping-cough lymphocytosis comes near what is defined as lymphaemic blood; that in such cases the white cell count may exceed 200,000 (Gulland and Goodall, *The Blood*, 1914, p. 280), a count probably unknown except in leukaemia; and, finally, that a haematologist "theor scent lymphaemia follow an attack of whooping-"has seen lymphaemia follow an attack of whoopingcough.'

Perhaps I ought to add that Pappenheim (op. cit., p. 26) believes that "since they (plasma cells) make their appearance in the course of a leukaemic leucocytosis, it would seem to suggest an inflammatory cause for the leukaemias in question."

West Ealing.

ROBERT CRAIK, M.D.Glasg.

### A SUGGESTION FOR A NEW SHAPE OF RUBBER DRAIN.

In the drainage of long sinuses the commonly used rubber tubing is not very satisfactory. It acts more like a foreign body in keeping the wound open, and, in most cases, its withdrawal is necessary before the contents of the wound can escape. The lumen of the tube quickly gets blocked with pus or clot, despite the numerous holes that are usually cut before its introduction, and its circular shape allows the tissues to embrace its exterior so tightly that pus can ooze past but with difficulty; also, it is troubled some to introduce owing to the tip of its pen-shaped end hitching in the sides of the wound, and, in the case of long or tortuous sinuses, the help of some instrument is required. The thin rubber cigarette drain is much better, but is also difficult to introduce into deep wounds.

In case the suggestion has not been made before (as it probably has been), I suggest that a more efficient drain for general use would be found in a rubber rod of cruciform or polyradiate section. The cruciform type would have four gutters for drainage purposes, each of which would act like an open drain instead of the closed sewer of the tube. This shape could not be blocked by oedematous tissues, as there would usually be free exit in Thus less interference would be necessary, the angles. for the drain could be left longer in situ, and when reintroduction became necessary the central pointing would allow it to be much more easily done than with the pointed periphery of the tube.

In use this shape has proved what I have stated, and in such cases as infected amputations it was surprising how the gutters of the drain became wet with purulent fluid as soon as it was introduced. I would suggest three sizes and three separate shapes of drain; any rubber manu-facturer could easily make them at the same prices (or nearly so) as tubing:

- 1. Small size, triradiate in section, thickness of flanges 1 mm., length of each ray to centre 2.5 mm.
- 2. Medium size, cruciform in section, thickness of flanges

1 mm., length of each ray to centre 3.5 mm.
3. Large size, penteradiate in section, thickness of flanges 1.5 mm., length of each ray to centre 5 mm.

to 6 mm. A. W. M. SUTHERLAND, M.B., Ch.B., R.A.M.C.

New Military Hospital, Rugeley Camp, Cannock Chase, Staffs.

### Reports of Societies.

### PAINFUL NERVE STUMPS.

AT an occasional lecture delivered before the Section of Electrotherapeutics of the Royal Society of Medicine, Mr. EDRED M. CORNER showed a number of skiagraphs and drawings illustrating various causes of pain and irritation in amputation stumps, such as osteomyelitis, new bone formations, sequestrum formation, nerve inflammation, perve strangulation, etc. Afterwards he delivered a lecture on the subject of painful nerve stumps. In the healing of a nerve end there were three stages: the stage of repair a nerve end there were three stages: the stage of repair and inflammation, the stage of compression, and the stage of regeneration of nerves. The amount and duration of these might be minimized, but they could not be abolished. Compression was the keynote of the causation of pain before the war. At the present time the keynote was in-flammation, and that inflammation ascended the nerve trunk-an ascending neuritis. Hence the local end must be excised and a length of nerve with it, so as to divide

be excised and a length of nerve with it, so as to divide the nerve above the ascending inflammation within it. Clinically five types could be recognized: (1) The type of pain immediately following operation and due to the trauma inflicted on that occasion. (2) The type due to com-pression of nerve fibres, particularly if inflamed. (3) The inflammatory type. (4) The type due to regeneration. The nerve fibres of regeneration were subject to both com-mension and inflammation merifold owing to the hranch pression and inflammation, manifold owing to the branch-ing of the regenerating fibres. (5) The type of persistent pain when all the nerve trunks had been removed, and due to the initation to the irritation of nerves not running in trunks excited by the presence of unabsorbable ligatures, or stitches, osteo-myelitis, or new bone formation. The extensive repair in an amputation wound led to the formation of much irritative wound callus which sent up each connective tissue plane a tongue of irritation, like smoke from a fire.

The lecturer showed a specimen removed from Hunter's canal in which the femoral artery, femoral vein, the internal saphenous nerve, and the ligatures were ensnared in one process of the scar tissue. To this bundle was attached a part of the adductor magnus muscle which pulled on the nerve at every forward movement of the stump. A cut nerve regenerated, and none could stay that Like the flow of a river, it could be directed and process. controlled, but not stopped. If a river met an obstruction it formed a lake until it flowed over, under, or round that obstruction. Similarly with regeneration : when it met an obstruction it pooled up, forming a mass, a regeneration neuroma, a frequent cause of recurrent pain in a stump. In conclusion Mr. Corner demonstrated the structure of end bulbs, the formation of nerve pencils, the methods of nerve amputation and their results.

Professor MARINESCO showed a beautiful and most instructive series of microscope slides demonstrating:

Inflammation in neuroma, showing plasma cells and cells

Inflammation in neuroma, showing plasma cells and cells with glycogen.
Different types of new nerve formation.
Neuroma of amputation. In centre can be seen fibres, probably silk; around are numerous giant cells eating up the fragments of fibre, and a leucocytic infiltration.
Fibre in giant cells in median nerve.
Nerve plexus, new formation.
Fusion of neuroma of median nerve with the tendon of flexor sublimis digitorum. The tendon has been invaded by nerve fibres.
Nerve plexus in neuroma.
Endoneuritis of a little nerve bundle. The nerve fibres

 Nerve plexus in neuroma.
Endoneuritis of a little nerve bundle. The nerve fibres present marked reaction of regeneration.
Osteomyelitis at centre of the preparation, above and to the left there are three myelophages, on the right several s osteoblasts. 10. Plexiform or plexus formation in neuroma.

11. Recent inflammation in neuroma. 12. Neurotization of coagulum. One sees bundles of new formation and fibres terminating in bulbs.

### PHYSIOLOGY OF CHLOROFORM ANAESTHESIA.

AT a meeting of the Section of Anaesthetics of the Royal Society of Medicine Dr. GEORGE A. BUCKMASTER discussed some considerations on the physiology of anaesthesia by chloroform. He said that the experiments carried out a few years ago by J. A. Gardner and himself for the purpose of ascertaining the anaesthetic and lethal quantities of chloroform in the blood of anaesthetized animals, the part played by the red corpuscles in the transport of the drug, and the rates of assumption and elimination of chloroform depended upon the determina-tion of the chloring in chloroform by the admittal tion of the chlorine in chloroform by the admittedly accurate method of Carius. They found that as much as 94 per cent. of the drug might be carried by the red as 94 per cent. of the drug might be carried by the real corpuscies. The vapour and pressure of chloroform in air at the anaesthetizing value lay somewhere about 8 to 10 mm. of mercury. At this pressure they inferred that chloroform was held with some degree of firmness by the corpuscies, but whether this was due to its linkage with haemochrome (haemoglobin in its state within the corpuscles) or other constituent or constituents of the red

corpuscies was a matter of dispute. It was probably absorbed by the cell proteins of the corpuscie. In experimental anaesthetization with known per-centages of chloroform, when the inhalation proceeded steadily, they recognized in animals (cats and dogs) a primary and secondary danger point. From their tables the investigators concluded that the body weight was the investigators concluded that the body weight was without influence on the percentage by chloroform in the blood necessary to produce anaesthesia. The percentage value of chloroform in the blood was important in anaesthesia, for under conditions in the same animals of anaestnessa, for under conditions in the same animals of (1) normal quantity of blood, (2) diminution of this by haemorrhage, (3) augmentation by transfusion, the per-centage remained constant at about 50 mmgr. during complete anaesthesia, though the total quantity rose and fell with the corpuscular richness of the blood.

Curves were shown illustrating the rate of assumption of chloroform by the blood during anaesthesia, and the rate of elimination from the blood after anaesthesia. Iu Ių their opinion chloroform underwent no change within the body. It was neither decomposed nor oxidized. These

occupied from 1870 till his death in 1913, when his place was taken by the representative of the third generation of the family.

DR. LEOPOLD MEYER of Copenhagen, who died recently at the age of 65, was a distinguished obstetrician and gynaecologist and a recognized authority on abdominal surgery. He was the author of a treatise on the pathology of pregnancy, published in 1906, and a textbook on midwifery, which appeared in 1914.

### Aniversities and Colleges.

UNIVERSITY OF CAMBRIDGE.

THE Raymond Horton-Smith Prize for the best thesis for the degree of Doctor of Medicine during the academical year has been awarded to Frederick George Chandler, M.A., M.D.; subject, Empyema. *Proxime accessit*, William Parry Morgan, M.A., M.D.; subject, Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis.

### Medical News.

"OUR DAY," which is set aside each year for a great effort on behalf of the British Red Cross and Order of St. John, will be held on Thursday, October 24th.

THE opening of the new session at King's College Hospital Medical School (University of London) will take place on Tuesday, October 1st, at 3.15 p.m., under the presidency of Viscount Hambleden. Surgeon-General Sir W. Watson Cheyne, Bt., F.R.S., Emeritus Professor of Clinical Surgery, will receive the scholars and prizemen, and deliver an introductory address. Academic dress will be worn.

THE opening of the winter session of the Middlesex Hospital Medical School will take place on Tuesday, October 1st, at 3 o'clock, when Lieut.-General T. H. J. C. Goodwin, C.B., C.M.G., D.S.O., Director-General Army Medical Service, will occupy the chair. The prizes will be distributed by the Dowager Countess Brassey, and Dr. Browning, director of the pathological laboratories, will deliver an address on the importance of research work in connexion with national health.

THE inaugural address for the ensuing session at the London (Royal Free Hospital) School of Medicine for Women (University of London) will be delivered by Miss A. Maude Royden at 8, Hunter Street, Brunswick Square, W.C.1, on Tuesday, October 1st, at 3.30 p.m. Academic dress will be worn.

A MEETING of the Society for the Study of Inebriety will be held on Tuesday, October 8th, at 4 p.m., in the rooms of the Medical Society of London, 11, Chandos Street, Cavendish Square, W.I, when Major Robert B. Wild, M.D., F.R.C.P., Pro-Vice-Chancellor of the Victoria University of Manchester and Professor of Materia Medica and Therapeutics, will open a discussion on the pharmacology of alcohol. All interested in the subject are invited to be present.

A CREMATION library, consisting of books, periodicals, pamphlets, and articles, formed by the Cremation Association of America, was accepted by the John Crerar Library, Chicago, in January, 1915. Since then the library has received from the association, or has acquired in other ways, a large additional number of publications. The titles of these are enumerated in a list which is the library.

THE Journal of General Physiology is the title of a new bi-monthly periodical, the first number of which was issued by the Rockefeller Institute for Medical Research, New York, on September 20th. It is intended to serve as an organ for the publication of papers dealing with the investigation of life processes from a physic chemical point of view. The editors are Dr. Jacques Loeb, of the institute, and Professor W. J. V. Osterhout, of Harvard.

THE poison of the Manchurian scorpion causes haemolysis, and S. Iwano, by making extracts from the pulped terminal joint of the tail, in which it is contained, finds that two poisonous proteins can be obtained, the one being extracted by distilled water and the other by dilute acetic acid. The toxicity is destroyed by the action of pepsin, trypsin, potassium permanganate, and calcium hypochlorite. As already announced in the JOURNAL, a meeting of the medical profession will be held at Steinway Hall, Wigmore Street, London, W., on Tuesday, October 1st, at 5.30 o'clock, with the object of furthering the election of representative medical men, of any party, to the House of Commons, so that the considered views of the profession may be voiced in that assembly. Sir Henry Morris will take the chair, and the meeting will be addressed by Dr. Addison, Minister of Reconstruction. All members of the medical profession are invited to attend.

DURING the fiscal year ending June 30th, 1919, the United States Government will expend £200,000 upon the control of venereal diseases. The work will be carried out through the various State Boards of Health. It will include the obtaining of reports of infection, the control of infected persons so as to prevent dissemination of the disease, the establishment of free venereal clinics, the suppression of vicious conditions which favour the spread of infection, and systematic education of the public as well as those affected with the disease. A Division of Venereal Diseases has been established in the Bureau of the Public Health Services. Authority is given to this service to regulate the interstate travel of infected persons.

It is stated in the Wiener medizinische Wochenschrift that the Ministry for War, having learnt that several deaths have followed the use of the sinusoidal current (Sinusstrom) in the treatment of war neuroses, has forbidden its use in military hospitals. The faradic current may alone be employed in suitable cases. It appears that the fatalities observed were as sudden as chloroform fatalities, and that they occurred quite early—that is, soon after the current was applied. Status lymphaticus. has been found at the necropsies on such cases.

A CONFERENCE organized by the National Baby Week Council was held at Bedford College for Women, London, on September 18th, to inaugurate a propaganda campaign in support of the immediate establishment of a Ministry of Health. Dr. Eric Pritchard, Lord Willoughby de Broke, Dr. Saleeby, and others expressed the desire of the council to create a strong public opinion with a view to giving speedy effect to the promised introduction of a Ministry of Health Bill, and insisted that the country would not tolerate the opposition of private or vested interests or departmental jealousies to the immediate realization of its demands and hopes. A resolution was carried unanimously calling upon members and local committees to pursue an active campaign in favour of such a Ministry.

THE Board of Education has issued Regulations (Cd. 9154), under which grants to schools for mothers in England and Wales will be made by the Board during each financial year. A school for mothers is held to be primarily an educational institution providing training and instruction for the mother in the care and management of infants and little children. In determining a grant the Board will take into account the expenditure incurred since April 1st, 1917, on the provision of food for expectant mothers and nursing mothers, and for children under 5 years of age, where such provision is certified by the medical officer of the centre or by the medical officer of health to be necessary and where the case is necessitous. The grant payable in a financial year will be assessed on the basis of work done by the institution during the previous year. In fixing the rate of grant, the scope, character, and efficiency of the work will be taken into consideration. In this connexion the Board will have regard to the provision made (1) for co-ordinating the work with that of a similar institution in the same district, of maternity centres, baby clinics, or infant dispensaries, and of the school medical service and the sanitary authority, and (2) for keeping records of attendances and domiciliary visits.

THROUGH the liberality of a group of New England manufacturers, who appreciate the importance of studying diseases of occupation and improving the conditions of labour, the Harvard Medical School has made arrangements for courses of instruction in industrial hygiene, with facilities for the investigation of problems of industry. Boston offers exceptional opportunities for work of this kind, as a great variety of industries are found in its immediate neighbourhood. The instruction and research work will at first be principally in the domains of chemistry, physiology, and medicine, and in these subjects new departments will be created. Instruction in the pharmacological, sanitary, and social aspects of industry will be given, to supplement the work of the school of public health. Opportunities will be open to three separate groups of workers—those engaged in research, medical officers of large industries, and inspectors of industries.