Lea] and within a few feet of the stream itself," and which obviously in times of rain and flood become a serious source of pollution.

No part of this report will be read with greater interest than the observations recorded on the causes of the great variations in the amount of microbial life in river waters during the course of the year. Changes of temperature or exposure to varied amounts of direct sunshine have hitherto been regarded as responsible for these variations, the Royal Commissioners stating in their recent report that bacterial life is injuriously affected by "even such a tempered amount of light as is present under ordinary conditions in Thames water." Professor Frankland now, however, demonstrates that the amount of rainfall—or, in other words, the volume of water flowing in the river—is the chief cause of these variations. In a series of most interesting tables and diagrams he brings the number of microbes in raw Thames water into contrast with each of these alleged causes, and his conclusion is as follows: "That the number of microbes in Thames water is determined mainly by the rate of the flow of the river—or, in other words, by the rainfall—and but slightly, if at all, by either the presence or absence of sunshine, or a high or low temperature. With regard to the effect of sunshine, the interesting researches of Dr. Marshall Ward leave no doubt that this agent is a powerful germicide, but it is probable that the germicidal effect is greatly diminished, if not entirely prevented, when the solar rays have to pass through a comparatively thin stratum of water before they reach the living organisms. If this be so, however, it can be no matter of surprise that the effect of sunshine upon bacterial life in the great mass of Thames water should be nearly, if not quite, imperceptible." In regard to *filtered water*, if 100 microbes or their spores per c.c. be taken as the permissible limit of bacterial life, the effluents of the Chelsea, the West Middlesex, the Lambeth, and the New River Companies were almost uniformly of great bacterial purity. Never once throughout the entire year did the Chelsea filtered water exceed the above limit. The West Middlesex and the Lambeth both transgressed once (in January) and the New River Company twice (January and June). Ten samples of the Grand Junction Company's effluent (four from the Kew and six from the Hampton filters) exceeded the limit, the worst results (464 and 278 per c.c.) being in January and June. Four samples of the Southwark and Vauxhall Company's effluents, taken respectively in January, February, July, and December, were also unsatisfactory. The very small storage possessed by both of the two last-named companies is considered mainly responsible for these results. The East London Company's filters worked very irregularly up to, but not after, the end of July, and up to that time (except during May) there was always at least one unsatisfactory sample. Most of the foregoing abnormal results occurred when the raw river water was bacterially very impure.

The closing pages of the report are devoted to a *résumé* of the results hitherto obtained at the Lawrence (Mass.) Experimental Filtration Station, which are briefly: (1) that within the limits of 300,000 gallons to 3,000,000 gallons per acre per day, variations in the rate of filtration have practically no effect on the purity of the effluent, and that filters may be satisfactorily worked even at the rate of 5,000,000 gallons per acre per day, provided the uniform rate is maintained; (2) that, the finer the size of the sand grains between the limits 0.2 mm. and 0.9 mm. diameter, the higher the percentage of bacteria removed; (3) that with any moderate rate of filtration the depth of the sand within the limits of 1 ft. and 5 ft. exerts but little influence upon the percentage of bacteria removed; and (4) that scraping the surface of a sand filter does not interfere with bacterial efficiency, provided there is no mechanical disturbance of the main body of the sand. It is well known that Professor Koch has pointed out certain difficulties attending efficient filtration during times of frost, which he ascribes to (1) freezing of the superficial sand layer, causing at first total arrest of filtration and later excessively rapid filtration through the portions of the surface which are the first to thaw and become permeable, and (2) the impossibility of cleansing the sand surface of open filtering basins which have become thickly covered with ice. Professor Frankland, however, refers to, and reserves for future report, some entirely novel phenomena affecting filtration which the recent severe weather in England has brought to light, and the publication of his observations will be awaited with much interest.

Stockport, Cheshire.

A NOTE ON TWO CASES OF PUERPERAL ECLAMPSIA.

By ROBERT CRAIK, M.D. GLASG.

CASE 1.—A married woman, aged twenty-seven years had her first child in October, 1893. Labour was normal, delivery easy, and it was noticed that very little blood was lost with the placenta. Twenty-four hours after delivery she became strange, complained that she could not see, and had twitchings of the face and arms. When I arrived soon afterwards she had a convulsion lasting a few minutes, which left her unconscious, with noisy breathing. After a brief interval there was a second convulsion, general and very violent. Six ounces of blood were at once taken from the arm, and as the third convulsion came on (before the arm was tied up) chloroform was administered till she was fully under. A specimen of urine was drawn off and found to be highly albuminous; the ankles and face were seen to be distinctly oedematous. She was packed with hot bottles to encourage sweating, and one drachm of chloral was given per rectum. Although the patient was unconscious there was not another convulsion for about an hour. It was much less violent and lasted only a few minutes, during which a little chloroform was used. Five hours from the beginning of the attack there was still a slight convulsion from time to time, and another drachm of chloral was given as before, and one-third of a grain of morphia hypodermically. There was no convulsion after this, and, although the patient remained unconscious for six hours longer—about twelve hours in all—it was plain that she was improving. She perspired very profusely nearly all the time. She seemed to go on well for three days; then she had shiverings, her temperature went up to 105° F., and the vaginal discharge was found to be highly offensive. The uterus was scraped and douched with warm perchloride of mercury solution, and an iodoform bougie was left in. The douche was used night and morning till the temperature became normal, about thirty hours after the first douching. There was a good recovery in every respect, except that when I last saw her, a month after the commencement of the illness, there was still a trace of albumen in the urine.

CASE 2.—A married woman twenty-one years of age, robust and rather stout, who was in the eighth month of her first pregnancy, was suddenly seized with convulsions just as she was about to rise one morning. Very soon afterwards I found her semi-conscious and breathing noisily, and in a few minutes a very violent convulsion set in and lasted a considerable time. As soon as the convulsion began to pass off rather more than six ounces of blood were taken from the arm. Chloroform was then administered and delivery attempted. The os soon yielded sufficiently to the fingers to allow of turning. Delivery was easy, as the child was small. An average amount of blood was lost with the placenta, which came away without much trouble on compressing the uterus. The manipulations occupied an hour (during which she was under chloroform), and delivery was completed about an hour and a half after the patient was first seen. An intra-uterine douche of perchloride of mercury was given. Some urine was drawn off and found to be blood-coloured and highly albuminous. She was packed with hot bottles to encourage sweating, one drachm of chloral was given per rectum, and one-third of a grain of morphia hypodermically. There were no convulsions for two hours after delivery, but they then set in and continued to recur at intervals of about half an hour for the following twelve hours, with varying degrees of violence. Chloral was given (one drachm every two hours) per rectum till she had had rather more than half an ounce in all. After that, chloroform was used from time to time when the convulsions were very severe, but it was not pushed. Eighteen hours from the first onset of the convulsions the patient was lying quite unconscious, breathing rapidly, with a very weak and rapid pulse. Her feet and legs were much swollen, and her face was markedly oedematous. Not more than three or four ounces of urine had been drawn off in twelve hours, and she was not perspiring freely. She seemed to be in a dying state. An enema of beef-tea and brandy was given, one-third of a grain of pilocarpin in solution was dropped on the tongue, and the hot bottles were continued. After lying for three hours in a seemingly hopeless condition,

bathed in perspiration, the pulse began to improve. It now became possible to give hot strong tea by the mouth in teaspoonfuls, and in this way half a pint was given in an hour. There was gradual improvement in the pulse, which became stronger and fell from nearly 200 to 120. Consciousness returned about thirty hours from the onset of the seizure, but there had been no convulsions during the last ten hours. Improvement was now all that could be desired for two days, and then she was found to have a temperature of 104° F. The vaginal discharge was very offensive, but there was not any marked tenderness of the abdomen. The uterus was scraped out, pure carbolic was applied to its inner surface, and then it was thoroughly irrigated with hot perchloride of mercury solution, and an iodoform bougie left in. Irrigation with hot perchloride was repeated night and morning, the temperature remaining above 103° for two days, and not reaching the normal for a week. There was a good recovery, and the albumen disappeared from the urine in a much shorter time than in the first, and less severe, case. At one time or another there were seen in this urine blood corpuscles, blood casts, and hyaline casts, yet it was apparently normal in a fortnight.

Remarks.—In these two cases, which called for treatment on the same day within a few hours of each other, a similar course was pursued, with similar results. The only difference, indeed, was that one-third of a grain of pilocarpin was given in the second and more severe case when it was at the worst, whereas no pilocarpin was given in the first case. In both cases septic poisoning occurred, and the use of the catheter, the hot packing, and perhaps some neglect of the discharge during the period of unconsciousness may have led to this. Each case had its own catheter, syringe, &c., and reasonable precautions were taken to avoid sepsis. As the high temperature lasted so long in the second case, there probably was septic metritis. Four other confinements attended during the same week had a normal recovery.

Conisborough, Yorks.

ABSCESS OF LUNG TREATED BY DRAINAGE AND IODOFORM; RECOVERY.

BY J. EUSTACE WEBB, M.B. ABERD.

A WOMAN aged twenty-seven years came under the care of my partner, Mr. Wm. Hammond, and myself on Aug. 1st, 1894. She had given up all hope of recovery, as she had been told by two medical men that she could not live many weeks. Her mother died of lung disease at the age of thirty-two, and on the maternal side there was a decided history of phthisis. Her father was aged fifty-eight; he suffered from rheumatic gout. She had no brothers or sisters. She had inflammation of the lungs in early childhood, since which time she had been perfectly well. In the latter part of June, 1894, she was suddenly attacked, at the time of her menstrual period, with pain in the right side of the chest, which was followed by cough and expectoration. When examined on Aug. 1st the right chest gave the following physical signs: Great dulness, extending all over the base of the lung posteriorly to a line well above the angle of the scapula, and at the side and anterior part of the chest below a line continued horizontally round from the ensiform cartilage; vocal resonance and fremitus were present, but not markedly increased; the breath sounds were distant, but heard to the extreme base. The tape at the level of the ensiform cartilage showed an increase of one inch on the right side. The breath was fetid, had the characteristic odour of pus, and the air of the whole cottage was pervaded with the same sickly odour. The expectoration was purulent and nummular. The body was fairly well nourished, but she stated that she was losing flesh rapidly. Her pulse was 120, her temperature 102° F., and her respiration 30. Her appetite was very bad, and the tongue was red and glazed. As she lived six miles from my house a record of her temperature &c. could only be taken once daily. On Aug. 9 the chest was aspirated in the axillary line, in the sixth intercostal space; the needle penetrated to a depth of two and a half inches, and twelve ounces of pus, slightly mixed with froth, were drawn off. For some days after the operation she appeared greatly relieved, the fetor of the breath was very much diminished, and she was able to relish her food. No marked improvement, however, was noted in

her pulse, temperature, or respiration; the breath sounds could be heard more distinctly at the base, but there was no appreciable diminution in the dulness. On Aug. 25th she vomited about half a pint of pus, and again the fetor of the breath became less. The physical signs suggesting an increased collection of pus then became more marked, the dulness extending to above the middle of the scapula behind and to a corresponding level in the side and anterior part of the chest. She was losing flesh rapidly. Her respiration was 40, the pulse was 120 and very soft, and she was passing loose evacuations many times in the day. On Sept. 2nd a large trocar and canula, the size of a No. 14 English catheter, was passed through the chest-wall into the lung just above the angle of the scapula, and between it and the vertebral column it was directed forwards and outwards. This spot was chosen because it seemed to be that of the maximum density. When the trocar was withdrawn a flow of pus through the canula continued until fourteen ounces were collected. A drainage-tube six inches long was then passed through the canula into the abscess cavity, the canula was withdrawn, the drainage-tube was secured to the skin with thread and sticking plaster, and covered with a thick absorbent dressing. Each day the dressings were changed, and at first they were always found saturated with discharge. During the dressings the patient was brought to the edge of the bed in the dorsal recumbent position and directed to cough; by this means many ounces of pus were discharged. After the fourth day the drainage-tube was replaced by one considerably larger in calibre; this was removed daily, and after cleansing was filled with powdered iodoform, reintroduced, and blown clear into the abscess cavity. On Sept. 17th an ethereal solution of iodoform was injected through the tube into the cavity, a proceeding which almost caused death, for the glottis was thrown into spasm, and the odour of ether was very strongly perceptible in the breath. From this date she improved in a marked manner and on Sept. 24th the discharge had practically ceased. From Sept. 2nd she took one grain of iodoform in pill every four hours, and continued to do so until her removal to the convalescent home. On Sept. 24th the measurement of the chest showed a decrease of two inches on the right side at the level of the ensiform cartilage. On Oct. 6th she complained of pain in the front of the chest, and a tender spot was exhibited in the fifth interspace immediately below the nipple. On the 9th, as there was evidence of fluctuation at this point, an incision was made through which dressing forceps were passed and opened, when a large quantity of pus came away. A drainage-tube was then introduced, filled with iodoform, as before described. In a few days the sinus closed. On Dec. 1st there was a difference of three and a half inches in the measurements of the two sides. The temperature was then 99°, the pulse 100, and the respiration 40 a minute. She was removed to St. Michael's Home near Brent on Dec. 6th, 1894, and there made an uninterrupted recovery. On March 8th the right side of the chest measured three inches and three quarters less than the left at the level of the ensiform cartilage. The whole of the lower lobe of the right lung appeared to be solid, the percussion note was absolutely dull, and no breath sounds could be detected. On March 19, 1895, she returned to her old situation, having gained over two stone in weight since Dec. 1st. She said she felt perfectly well.

Liskeard, Cornwall.

Clinical Notes : MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

AN OPERATION FOR WEBBED FINGERS.

BY LEONARD A. BIDWELL, F.R.C.S. ENG.,
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THE deformity of webbed fingers, although not a very serious one, is often very difficult to treat. In my opinion, all the older methods of treatment are unsatisfactory in their results. The main objects to be aimed at in an operation for such a deformity are the avoidance of cicatricial contraction and the least possible interference with the palmar surfaces of the fingers. Simple division of the web produces so much