do not quite understand, unless the solution has been poured around a nerve of some size.

But I have never known the actual injection to be painful to any very objectionable degree. An infant, aged 2 years, may have 2 gr. of quinine thus administered in the fat of the buttock, and it will run off as if nothing had happened. Care must be taken not to inject the quinine endermically. Quite recently I have seen a case in which this was accidentally done, with the result that a piece of skin the size of a shilling sloughed out.

As to the efficacy of the method, I have no doubt that quinine thus used is more efficacious, dose for dose, than when administered by the mouth, while the cost of treatment is very much less, the patient is saved the misery of having to swallow a nasty draught, and the ordinary disagreeable symptoms of cinchonism are not developed.

But the praises lavished on solitary injections can only be the outcome of a very limited experience. For example, I have a temperature chart before me which shows that daily injections of 5 gr. for five consecutive days had no apparent effect on the course of the fever; the drug was then administered in 5-gr. doses thrice a day by the mouth for five more days, one hypodermic injection of 5 gr. of quinine being given on the fourth of these days, and the fever disappeared.

I have another chart of a case of most pronounced malarial cachexia, with anaemia, ague cake, and tachycardia, accompanied by great prostration and breathlessness. This is about the worse case I have seen recover. Five daily hypodermics consecutively given seemed to have stopped the fever, or, rather, greatly lessened the daily range of temperature, but in a few days the fever again set in. I again began with 5 gr. hypodermically, but the next day, as the fever showed no remission and the case seemed hopeless, the tachycardia being most distressing, while the patient sank into the too well-known condition of apathy, I injected 10 gr., continuing this for five days, when the temperature fell to 99°; thenceforward for five days more quinine was continued hypodermically in 5-gr. doses, with the result that the temperature rose no more, and the patient thereafter made steady progress. His last injection was on March 1st last. He is still in hospital, convalescence being well advanced. The palpitation has almost or quite ceased, he is putting on flesh, and is able to get quietly about for several hours a day.

I hope I have said enough to show there is nothing new in the use of quinine hypodermically, but that it is not the marvellous remedy some of its inexperienced advocates believe it to be; and lastly, that in the execution of the process the drug should not be injected into a muscle.

CASE OF SNAKEBITE IN THE LAKE DISTRICT.

By WILLIAM ALLEN, M.B., C.M.,
Hawkshead, Lancashire.

As few cases of snakebite have been recorded in this country, the following, which happily recovered, may prove interesting. Mr. J. P., aged 30, was walking through a wood on September 21st, 1902, when he came across an adder or viper (*Vipera berus*) which was basking in the sun. He procured a forked stick with which he held down the head of the snake, while he cut it off with a sharp knife, leaving only about one-eighth of an inch of body attached. In from fifteen to twenty minutes afterwards he took up the head to examine it, between the thumb and index finger of the right hand, when it bit him on the middle finger just above the nail, with one of the fangs only. A drop of blood appeared at once from the wound, which he sucked three or four times and spat out.

Pain began in a few seconds, and was like a wasp sting, shooting up to the armpit. He proceeded at once to the village, which was about half a mile away; after going about fifty yards his sight gradually grew dim and difficulty of breathing came on. That passed off, and was followed by a tingling sensation in the tongue, back of the mouth, and lips, which became swollen, the tongue protruding from the mouth. In a little while pain set in in the stomach, which prevented his walking, and he lay down on the grass. Cold sweats came on, the perspiration dropping off the face in

large drops; he then began to vomit, after which he felt easier, and was able to get to a neighbouring cottage.

He was seen professionally at 5 p.m., an hour and a-half after being bitten. He was suffering from collapse, with severe vomiting and diarrhoea. His sister, who was with him, had administered brandy and applied baking powder to the tongue previous to my arrival. I examined the finger, but could only find the slightest scratch, which I cauterized, and then administered a good dose of sal volatile; as the vomiting continued we gave him soda water and brandy—about half a pint of the latter in all. The collapse was treated by the usual methods.

The pupils were slightly dilated; the pulse was 110 and imperceptible at the wrists; the extremities were cold and the body bathed in perspiration. There was slight drowsiness, but he was quite conscious when spoken to. The temperature was normal and there were no convulsions. The swelling of the tongue had disappeared when I saw him, but the fauces were very red and swollen. There was no difficulty of breathing, but a feeling of tightness round the throat. I remained with him until 11 p.m., after which time he only vomited once. There was a little blood in the vomited matter.

The following morning I found the arm very much swollen and exceedingly painful, with fine red lines running up towards the axilla, to which I applied caustic, followed by fomentations of lead and opium. The patient was decidedly better generally and able to take liquid nourishment.

On September 24th the arm and the right side of the chest were covered by large ecchymosed patches, of a distinctly greenish colour, the swelling also was very considerable, but pain very much less. The discoloration and pain gradually subsided, and on September 29th the patient could use his arm freely and was able to both shoot and paint. There was no loss of power in the arm.

The case is interesting, seeing that the bite occurred a considerable time after the head had been detached from the body. The snake, which was 19 in. long, contained seven eggs, one of which had just hatched, the young snake measuring 6 in.

The Croonian Lectures

ON THE

NATURAL HISTORY AND PATHOLOGY OF PNEUMONIA.

By THE LATE J. W. WASHBOURN, C.M.G., M.D., F.R.C.P.,
Physician to Guy's and the London Fever Hospitals; Consulting Physician
to His Majesty's Forces in South Africa; etc.,

Delivered at the Royal College of Physicians, London, on
November 11th, 1902,

By W. HALE WHITE, M.D., F.R.C.P.,

AND EDITED

By J. W. H. EYRE, M.D., ETC.

[ABSTRACT.]

[DR. HALE WHITE said that the lectures he was about to deliver had been prepared by the late Dr. J. W. Washbourn, who was the Croonian Lecturer appointed for the year 1902. Before his death he had written the lectures in rough, and the task of revising and arranging them had been very kindly undertaken by Dr. J. W. H. Eyre.]

Pneumonia is a general term implying simply "inflammation of the lung tissue;" and as such includes all inflammatory processes occurring in the lungs, no matter how widely these may differ in their clinical phenomena or in their pathology. These remarks, however, relate chiefly to that form of pneumonia known as acute lobar pneumonia. Lobar pneumonia is defined as an acute infective disease, characterized anatomically by an inflammation of the lung tissue, resulting in the accumulation of fibrinous exudation, leucocytes, etc., within the alveoli, and clinically by a definite and fairly constant set of physical phenomena, directly consequent upon the anatomical changes. Ana-

tomical lesions and clinical symptoms are alike the direct result of the invasion of the lung tissue and the multiplication therein of a specific micro-organism—the diplococcus pneumoniae—and it is first necessary to direct attention to a consideration of the life-history and biology of this bacterial factor which plays so important a part in the causation of acute lobar pneumonia.

HISTORICAL.

The micro-organism which is the cause of acute lobar pneumonia goes under a number of different names—the pneumococcus, diplococcus pneumoniae, and the microbe septicémique de la salive; the best name appears to be the streptococcus lanceolatus. It was first discovered (1880) by Sternberg, who obtained it by inoculating rabbits with saliva from a healthy individual; shortly after Pasteur found the same micro-organism in saliva from cases of rabies and bronchopneumonia. Then followed a number of observations by Eberth, Koch, Friedlaender, Leyden, and Gunther, who found capsulated diplococci in the lungs from cases of lobar pneumonia. Further observations were made by Matray, Ziehl, Griffin, and Cambray. In 1883 Friedlaender stated that he had cultivated the pneumococcus on gelatine; but there is now no doubt that the organism which he cultivated was not the same as the one which occurred in the lungs in pneumonia, although it resembled it in possessing a capsule. Talamon in 1884, Fraenkel in 1885, and Weichselbaum in 1886, in a series of observations, were successful in isolating the pneumococcus from the lungs of cases of pneumonia, in testing its pathogenic effects upon animals, and in definitely establishing its causal relation to the disease.

MORPHOLOGY.

The morphology of the streptococcus lanceolatus varies with the conditions under which it is placed. The most common form is that of the diplococcus, in which it is met with in the exudation and in the blood of infected animals. Slightly curved chains consisting of three or four cocci are sometimes found in cultivations; long convoluted chains of forty or fifty cocci also occur, especially when cultivated in the blood serum of immunized animals. The cocci are rarely aggregated together in small bunches like staphylococci, or in pairs and tetrads like gonococci as occurs in the saprophytic variety described by Eyre and myself. The individual cocci are often lanceolate in exudations and in the blood of infected animals; in cultivations they are frequently oval or pointed at the ends in apposition, and in the peritoneal exudation of infected animals the cocci are elongated and resemble bacilli. Frequently the cocci are surrounded by a definite capsule, which may contain two or more cocci; the capsule is well marked in the blood of infected animals and in exudations, but it may be absent; in cultivations it is rarely present. The capsule has been supposed by some to be of a protective nature, defending the cocci against injurious influences.

FORMS.

In old cultivations and in old exudation various changes in the form of the pneumococcus can be observed. In some cases it does not stain evenly, or at all, with any of the ordinary reagents. Sometimes spherical bodies, larger or smaller than normal pneumococci, pear-shaped bodies, and varicose ovals, which stain only feebly and then at the centre, are met with. In old exudation minute irregular particles which stain very deeply and occasionally exhibit metachromatism, are found; also capsules containing one or more small particles. When undergoing destruction by leucocytes, Pane describes the cocci as being converted into small metachromatic granules. The coccus stains with all the ordinary methods, and by Gram. The capsule can be seen by staining in weak carbolic methylene blue and mounting in water, or by staining by MacConkey's capsule stain, which consists of dahlia, methyl green, and basic fuchsin.

The pleomorphism of the pneumococcus is of importance, as it shows that the microscopical examination may fail to recognize it, and in consequence it may exist under conditions when it is not suspected.

CONDITIONS OF GROWTH.

The optimum temperature for growth is 37.5° C., and the range is usually from 25° to 42° C.; some avirulent varieties

will grow at 18° C. It grows best when freely supplied with oxygen, but will grow in the absence of this gas.

The reaction of the medium is of importance. As a rule the pneumococcus will not grow upon a medium reacting acid to litmus, and it has been found by Eyre that different strains of pneumococci require a different "optimum reaction." It is exceedingly susceptible to variations in the composition of the medium upon which it is cultivated. If due care is taken in the manufacture it will grow upon most of the laboratory media, and best upon agar over the surface of which rabbit's blood has been spread. Upon this medium it retains its virulence and vitality for a long period, as was proved by Eyre and myself in a set of experiments.¹

Avirulent varieties are not so sensitive, and will grow well upon any medium, whether acid or alkaline, and at the ordinary temperature of the air.

VITALITY.

On artificial media the pneumococcus dies quickly; as a rule on broth or agar it remains living for at most a week, but on blood agar, as I have shown, it may remain living for as long as fifty days.² An interesting fact is the difference in vitality of individual cocci; sometimes, in cultivations of which the majority of cocci have died, a few remain living and can be successfully transplanted to other media. On one occasion I found that a cubic centimetre of a broth cultivation twenty-three days old, when injected into the peritoneal cavity of a rabbit caused death from pneumococcus septicaemia; and on another an agar cultivation was living sixty-four days after it had been planted. Emmerich found that in broth cultivations a few living cocci remained even after two months. He demonstrated their presence by making cultivations in large quantities of broth; some time later, when the cocci had sunk to the bottom of the flask as a precipitate, he transplanted large quantities of the precipitate to fresh media and obtained a growth, showing that among the dead cocci a few living ones remained. Eyre and I confirmed these experiments,³ and found further that the cocci remaining alive were avirulent and had changed in character. Sirena and Alessi found that when dried on silk threads the pneumococcus remained living from 31 to 192 days when kept in the dark, but died in 3 to 17 days in direct sunlight. In pneumonia sputum the pneumococcus is highly virulent. Bordini-Uffreduzzi found dried pneumonic sputum virulent after 55 days when exposed to diffuse sunlight, and after 12 days when exposed to direct sunlight.

Spolverini kept pneumococci in sputum living as long as 140 days, and found them under these conditions very resistant to decomposition, drying, and cold.

The pneumococcus is easily killed by physical and chemical agencies. It is destroyed when moist by a temperature of 52° C. acting for ten minutes, and by a 1 per cent. solution of carbolic acid or a 1 in 20,000 solution of perchloride of mercury acting for two hours.

THE APPEARANCE OF CULTIVATIONS.

The character of the cultivations upon solid media resembles those of the streptococcus pyogenes longus. On the surface of agar the colonies are minute and semi-transparent, and do not coalesce, and in broth a fine uniform turbidity is produced.

The growth on blood-agar is characteristic, inasmuch as the haemoglobin is converted into a canary-coloured pigment, which later becomes of a chocolate hue and diffuses into the agar. This pigment appears to be the same as the pigment found in rusty sputum. In broth the growth rapidly reaches a maximum; Eyre and I found⁴ that in broth the growth reached its maximum in twenty-four hours.

The rate of growth depends upon the character of the medium. In rabbit's serum we found the growth reached its maximum in twelve hours, and Eyre has found that when cultivated in different samples of broth, each possessing a different reaction, the maximum of growth is reached at different periods.⁵

CHEMICAL PRODUCTS.

The pneumococcus produces an acid which appears to be lactic acid. It also produces a milk-curdling ferment, although some varieties produce no clotting in milk. It does not produce gas or indol.

TOXINS.

The pneumococcus is like the streptococcus pyogenes long in producing practically no soluble toxin, differing in this respect from the diphtheria and tetanus bacilli. Filtered broth cultivations are only slightly toxic; I have frequently injected as much as 20 c.cm. into rabbits without causing death. Auld states that he found that filtered cultivations in doses corresponding to 1 per cent. of the body weight (for example, 30 c.cm. dose administered to a rabbit weighing 3,000 grams) were sometimes fatal to rabbits.

Pane states that broth cultivations, kept until the cocci are dead, are only slightly more toxic than ordinary broth—for example, when broth was fatal in doses corresponding to 4 per cent. body weight, the cultivation was fatal in 2 per cent. Cultivations sterilized in various ways are only slightly toxic. Issaef found that cultivations made in rabbit's serum and sterilized by chloroform were toxic in doses of 2.5 per cent. of the body weight, and that the blood from an infected rabbit treated with glycerine, made alkaline, and filtered, was sometimes fatal to rabbits in doses of 1 per cent. body weight.

Eyre and I found that the growth scraped from fifteen agar tubes, made into an emulsion with water and sterilized by exposure for ninety minutes to a temperature of 56° C., produced no effect upon a small rabbit. The brothers Klemperer were able to obtain a toxin from the bodies of pneumococci by precipitation with alcohol. The amount obtained from a quarter of a litre of cultivation killed a small rabbit, but a similar amount failed with a second.

It is evident from the above that the pneumococcus does not produce much in the way of toxins, or, if it does, that this toxin is very unstable and is destroyed readily.

PATHOGENIC EFFECTS UPON ANIMALS.

Rabbits and mice are highly susceptible; guinea-pigs, sheep, dogs, cats, and rats are slightly susceptible, while pigeons and fowls are absolutely immune. The human being appears to be among the slightly susceptible animals. The brothers Klemperer⁶ found that 0.2 c.cm. of a broth cultivation (sufficient to cause death in a rabbit) only produced local redness and pyrexia when introduced under the skin of patients who were thus treated with the object of curing cancer. On the other hand, I know of an instance where the injection of two doses, each 1 c.cm. of a broth cultivation, into an abdominal tumour set up a fatal peritonitis.

Eyre and I made a series of observations upon the resistance of different animals, using a pneumococcus of high virulence.⁷ We found that 0.000001 of a small loop of our cultivation was fatal to rabbits and mice, the same quantity being fatal to both; in the former animal the same quantity was fatal, whether introduced into the peritoneal cavity or into the subcutaneous tissue, but after subcutaneous inoculation, the animal died at a later period. Guinea-pigs varied considerably in susceptibility: sometimes the whole of a virulent cultivation was not fatal, and at other times 0.1 of a loop was fatal.

We found that fowls and pigeons were absolutely insusceptible: on many occasions we introduced 20 to 30 cubic centimetres of a virulent broth cultivation into the peritoneum of the fowl, also the contents of five blood-agar tubes, without producing any ill-effects. We believe that this is due to the high temperature of birds, the temperature of a fowl varying between about 41° and 43° C.

PATHOGENIC EFFECTS UPON RABBITS.

If a highly-virulent cultivation is introduced into a rabbit the animal dies rapidly of a general septicaemia; the period which elapses between the inoculation and death depends upon the quantity introduced and the virulence of the pneumococcus, and to a lesser extent upon the mode of infection. For example, a virulent cultivation introduced in sufficient quantity into the peritoneal cavity causes death within twelve to sixteen hours, while the same quantity when placed under the skin takes twenty-four to seventy-two hours to cause death. On *post-mortem* examination there are usually signs of acute septicaemia; the spleen is either normal in size and consistency, or it may be enlarged; in the latter case it may be very hard or distinctly soft. On examining the blood it is found to be crowded with capsulated diplococci.

LOCAL LESIONS.

There is usually a local lesion at the site of inoculation; if the injection is made into the peritoneal cavity, flakes of lymph are scattered over the peritoneum and haemorrhages are found in various parts of the peritoneum. Oedema in the anterior mediastinum is not infrequent and the mesentery is often rolled up. If the animal dies very early there may be no visible peritonitis.

After subcutaneous inoculation into loose connective tissue, such as that of the base of the ear, the inoculation causes an enormous swelling extending over the face and down the neck. Different effects occur where the subcutaneous tissue is not so loose. Eyre and I have carefully studied the effects produced by inoculation into the subcutaneous tissue of the anterior abdominal wall of rabbits, and our results may be summarized as follows:

If the animal dies very early, hardly any lesion is to be observed, at most a slight haemorrhage. If the animal dies within the first three or four days, as after inoculation with virulent cultivations, an infiltration is observed between the skin and the muscle, which may be either gelatinous and semi-transparent, or it may have an opaque yellow appearance; in either case it may be tinged with blood. The microscopical examination shows the latter to be a purely cellular exudation, and the former mixed cellular and fibrinous exudation.

INVASION OF THE TISSUES BY THE COCCI.

The temperature begins to rise immediately after inoculation, and reaches a maximum of about 41° C. in about five hours; it remains at the maximum for about two or three hours, and then quickly falls. For two or three hours before death it is subnormal. I examined the blood in a number of cases, both during life and at various periods after killing the animal. At the end of a few hours a few cocci can be found in the general circulation, and the number increases as the temperature rises, but it is only when the temperature begins to fall that any large number are found. During the last two or three hours of life, when the temperature is subnormal, the blood becomes crowded with cocci. The respirations increase in rapidity with the temperature, and when the latter is at its maximum they begin to be laboured; as the temperature falls the dyspnoea becomes more marked, the head moving with each respiration; the animal refuses food, but does not suffer any pain. It becomes quite quiet, and crouches up in a corner of the cage; death is often preceded by convulsions.

Pane states that after subcutaneous inoculation with pneumococci causing death in four or five days the cocci can be found in the blood in twelve to eighteen hours. Goldscheider and Mueller⁸ injected pneumococci into the circulation; in one minute and three-quarters they were found in the endothelium of the lungs, as well as in the leucocytes; this was associated with hypoleucocytosis in the large vessels, and hyperleucocytosis in the capillaries.

If the inoculation is made with a less virulent cultivation the animal takes longer to die; if it takes as long as seven or eight days the infiltration at the site of inoculation when examined microscopically is usually found to be undergoing fibrous change. The blood then contains only a few cocci. In such cases metastatic lesions are not infrequently found, although they may be present even in cases dying early. In two cases I observed pneumonia, both cases occurring after intraperitoneal inoculation, which was followed by death in two days; in one case the whole of the upper lobe of one lung was solid, and there were several patches of lobular pneumonia in the lower lobe; the pleura was covered with thick fibrin. In the other case there was a patch of lobular pneumonia and pleurisy. Pleurisy without pneumonia was observed in three cases; in one of these the animal lived for eleven days after subcutaneous inoculation, and there was thick lymph on the peritoneum, as well as on both pleurae.

Fraenkel especially mentions pneumonia occurring after injection with attenuated cultivations. These cases are interesting as showing that pneumonia may arise from infection from the blood, and not necessarily by inhalation. If the cultivations are still more attenuated, death results at a still later period, perhaps at the end of three or four weeks. As a rule in these cases the skin over the local lesion becomes necrotic and separates, leaving an ulcer behind; the animal becomes

extremely emaciated, and after death no cocci can be found in the blood or tissues, for example, a rabbit weighing 3,795 grams was inoculated subcutaneously; it died about a month afterwards, its weight had fallen to 1,780 grams, and no cocci were to be found in the blood or the spleen. If the animal has been partially immunized before inoculation, the formation of an abscess which bursts and discharges a creamy pus is often the only result.

SPECIAL LESIONS PRODUCED BY INOCULATION.

Weichselbaum and Guarnieri produced endocarditis by inoculation according to the method of Rosenbach. Zaufal produced otitis media by direct inoculation into the middle ear. Gasparini⁹ was able to produce conjunctivitis and general inflammation of the eyeball by inoculation.

A number of observers (Fraenkel, Weichselbaum, and Monti) have produced pneumonia by direct inoculation into the lung. Gamaleia¹⁰ states that direct inoculation into the lungs of sheep, rats, and dogs is followed by pneumonia, but he does not give an exact description of the microscopical appearances. Four sheep injected into the trachea, at first with tartarated antimony and then with the pneumococcus, developed pneumonia. The following experiments have been made by Eyre and myself.

A rabbit was first anaesthetised, and then a small quantity of a blood-agar cultivation of the pneumococcus emulsified with broth was introduced into the lungs through a glass cannula previously passed through the larynx into the trachea. Twenty-five rabbits were inoculated in this manner, and 8 different strains of the pneumococcus were employed in the experiments. Of these 25 rabbits, 13 were killed at various periods after inoculation, and the respiratory organs found to be perfectly normal. In 7, however, definite areas of pneumonic consolidation were observed, in one case the left lung being completely solid, whilst in another small solid areas of a greyish colour were scattered throughout the tissues, both lungs presenting a typical picture of broncho-pneumonia.

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MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, ETC.

EPIDIDYMITIS AS A COMPLICATION OF ENTERIC FEVER.

PRIVATE P. L., Imperial Yeomanry, was admitted to hospital at Boshof on April 4th, 1902, suffering from enteric fever contracted on "trek." The attack was moderately severe in character, but ran an uneventful career, the temperature falling to normal at the end of three weeks. On May 12th he was allowed to get up for the first time. On May 13th he complained of pain in the right groin and right testicle. On examination the right testicle was found to be very tender and considerably swollen; the epididymis was chiefly affected. A slight, thin purulent discharge was noticed coming from the urethra. The patient stated he had never had gonorrhoea, and there was no history of recent exposure to infection. His temperature was elevated on May 13th and 14th. By May 18th the discharge had disappeared, and the pain and tenderness were no longer complained of; there was still considerable swelling and induration of the epididymis. Osler, in his *Practice of Medicine*, mentions orchitis, usually associated with catarrhal urethritis, as an occasional complication of enteric fever, but it appears to be rare, as he says only 16 cases have been collected from the literature by Sadvain.

J. G. McNAUGHT, M.D.,
Captain, R.A.M.C.

Boshof.

AN OUTBREAK OF TYPHOID FEVER, WATERBORNE.

THE first case of this epidemic was observed¹ on July 7th, 1902, and between that date and August 25th 225 cases were reported, extending over an area of about twenty-five square miles, all of which were subject to the influence of water proved by chemical and bacteriological analysis and circumstantial evidence to contain sewage matter and possibly enteric bacteria. The weekly occurrence of the cases was: First week, 56 cases; second, 71; third, 37; fourth, 15; fifth, 20; sixth, 5; and seventh, 4. The apparent fall in the fourth and rise in the fifth week was due to the failure in reporting some of the cases in the fourth week, but undoubtedly fresh cases occurred in the fifth, sixth, and seventh weeks clearly traceable to the polluted water, which was cut off on July 10th. Only two cases have yet been reported infected by those due to the water, and these occurred in a family who, although provided with two nurses, were very careless. Of the cases, 193 were removed to Banbridge Fever Hospital, a distance of from ten to fourteen statute miles, 17 to Lurgan Fever Hospital, about eight miles, and 15 were treated at home, their removal having been contraindicated for various causes.

In Banbridge Fever Hospital 12 deaths occurred, 1 in Lurgan, and among those treated at home 3. Of the latter, one died from asthenia, one from perforation, and one from haemorrhage. I have no information of the immediate cause of death of those cases treated in hospital.

The precautions taken to prevent the spread of the epidemic other than cutting off the polluted water were:

Removal of all patients fit for deportation to hospital.

Disinfection of faeces, soiled clothes, and premises in which cases occurred. Destruction of possibly infected refuse by fire.

Structural improvements in water supplies and sewage system.

The disinfectants used were carbolic acid and perchloride of mercury.

JAS. TAYLOR,
Medical Officer of Health, Tandragee Dispensary.

EPIDEMIC JAUNDICE IN SOUTH AFRICA.

I HAVE seen many cases of this disease during the campaign in South Africa, occurring especially in the autumn of the year and in districts at an altitude 3,000 feet above sea level. It is especially prevalent at these times in the Western Transvaal, and the fact of the occurrence of this disease among colonials does not point to its being limited to the troops. The symptoms are invariably consistent, and occur as follows: Patients will come at first complaining of loss of appetite, nausea, vomiting, and feelings of *malaise*, while it is always possible to elicit a previous history of constipation or diarrhoea; in many cases there is a temperature from 100° to 103°, while in malarial patients an attack of *ague* ushers in in this disease. On the next day patients will complain of great pain in the epigastrium and right hypochondriac region, while upon examination the liver will be found to be enlarged at least two fingerbreadths below the costal margin, and over the gall-bladder region can be percussed out a pear-shaped tumour, corresponding in size to an enlarged gall bladder; at the same time, the patient will usually inform you that his urine is dark and his stools white. A day or so later the conjunctiva becomes markedly yellow, and the discoloration extends all over the body. The most beneficial treatment is rest in bed, milk diet, and calomel gr.iiij every evening, and I feel certain that I have aborted attacks by administering doses of calomel gr.v as soon as I expect how the indisposition is to end. The course of the disease is from ten days to three weeks, but great weakness is noticeable in the stage of convalescence. From the history I am of opinion that these are cases of obstructive jaundice caused by a catarrh spreading from the duodenum up the bile duct to the gall bladder and liver.

R. V. DOLBEY, M.R.C.S., L.R.C.P.,
Civil Surgeon, Klerksdorp, Transvaal.

UNDER the will of the late Mr. John Corbett, of Droitwich, the sum of £10,000 passes to the Corbett Hospital at Stourbridge and £1,000 to the Worcester Infirmary.

¹ BRITISH MEDICAL JOURNAL, August 2nd, 1902, p. 371.