evidence afforded by the duration and character of the underground service of the individual, and his previous medical history.

APPLICATION OF RESULTS TO OTHER INDUSTRIES

The brief description which I have given of the three distinctive clinical, pathological, and radiographic types of silicosis met with may suffice to enable you to understand the basis upon which our standards of diagnosis and classification rest. How far our results can be applied to the parallel or allied conditions encountered in other dusty occupations is another matter. Pneumoconioses are not all of one type. Asbestosis, for example, differs distinctively from silicosis in the character of the lesions produced, which are dependent on differences in the chemical and physical properties, and to some extent probably on the mere size of the particles inhaled. The dust particles which produce silicosis are of very minute size, of the general order of 1 to 3 microns, easily conveyed, by phagocytic cells, from the alveoli and infundibula to the small intrapulmonary aggregations of lymphoid tissue, which appear to provide the anatomical basis of nodule formation. Asbestos fibre is in this respect much less tractable, a single point which has, I think, been emphasized by Kettle. The cases of silico-anthraxosis which have been described as occurring in some coal miners, particularly among men who have worked for considerable periods in hard headings, are complicated by the conjunction of coal dust and silica-containing dust in the atmosphere breathed, and in the lesions produced, and the latter are strikingly different from the lesions of a true silicosis in the low predisposition shown among coal miners to the ultimate development of tuberculosis. It is clear that each industry must work out the problem of diagnosis for itself. This can be done only by the method which we have employed—namely, by the careful correlation of the results of pathological, clinical, and radiographic examination in a large series of individual cases, both among those which are affected by respiratory disability and those which are not. Radiographic examination taken by itself may be a misleading guide, until it has been discovered how the radiograph is to be interpreted in the light of the results of such a correlation, carried out in detail in each dusty trade.

COMMENTS ON THE RECENT OUTBREAK OF PNEUMONIA

BY

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A somewhat striking personal experience in the last six weeks* of fifteen cases of severe pneumonia leads me to make a few clinical comments upon them. I call them—unscientifically, I admit—pneumonia and influenza, because they occurred in patients during a period which is popularly called "an outbreak of influenza." I make no pretence to an addition to what is already known about such cases, and perchance it is only a form of egotism that has led me to write this short article; an egotism based upon a memory of being struck down in St. John's Wood Road when walking to the Zoo in the 'eighties, during the first—shall I say?—recent visitation of this scourge to England. The astounding weakness left after this attack impressed upon a young and strong student the reality of a disease which many were inclined then to deride, and left a memory never to be forgotten.

Naturally one asks oneself to-day, Why has there been so much pneumonia this year? The winter has not been

in reality severe, and not to be compared with that year in which to walk across the Serpentine became a matter of course. It has, in fact, been unusually mild at intervals, though this mildness has been suddenly interrupted by bouts of horrid winds. It is noteworthy that no one in the street has been seen with a smiling face, and the ruthless severity of the Inland Revenue authorities and the insanity of the world at large may be accountable for the general level of melancholy and anxiety which spell widespread loss of nerve tone. Whatever may be the explanation this fact remains, that the cases were of the greatest severity, and some were examples of recovery that almost passed belief.

Men, women, and children have all been among the victims. The onsets have differed; some have developed a slight cold followed by quick recovery, and then some days later a sudden relapse with the development of the pneumonia; others have had a sudden dramatic rigor with vomiting; while others again have been obviously ill, but have developed the pneumonia insidiously. Almost all arrived in hospital with that peculiarly alarming low-pressure pulse that is known to all physicians, and some with that livid pallor which is the dread of all who carry the responsibility for their treatment. In one case, a very strong woman in the prime of life with a calm and courageous outlook, apparently only the front of one lung appeared to be unaffected, yet she recovered after more than eleven days of high fever, pleurisy, and spreading pneumonia.

Another case, also a woman, 57 years of age, gave me a new experience in that I was called to her with acute heart failure, oedema of the less affected lung, and with what is popularly called the "death rattle" in her throat. In fact, she appeared moribund. Moreover, having vinous tendencies, she had previously, and in spite of every care, indulged in that furtive slipping out of bed when in mild delirium which none of us welcomes in advanced pneumonia. She recovered, reacting to a daring dose of morphine and atropine and the intramuscular injection of strophanthin. Again, a district nurse, overworked before her illness, was so weak that for some days she made no effort to live, a complication that every practical doctor hates. When eventually she recovered she retained not the slightest memory of her illness, but nevertheless eventually left for a convalescent home bright and full of courage. Yet another nurse, when we had reached the stage of partial despair, had an unexpected crisis in which the temperature dropped 8° F., falling below the limits of the temperature chart. This case particularly interested me, for it was the only one which offered an opportunity for the employment of an antiserum, but the typing was antagonistic. Had I used the serum I am certain that I should have exclaimed, "What a magnificent success!" An old lady, 72 years of age, with high fever, basal pneumonia, and general bronchitis, proceeded in a most dignified way to recover steadily with a temperature falling by lysis. A small boy who had severe upper lobe pneumonia with pleurisy showed a colour closely resembling the "heliotrope" cases of 1918. This boy refused all food and vomited what he did have, but conquered his extensive lesions and made an excellent recovery.

In several cases the pneumonia affected both upper lobes, and it was interesting to note the clinical lesions spreading in the lungs when the temperature was gradually falling. In some, too, there was a drowsiness which amounted almost to coma, and this utter exhaustion lasted for days after the acute illness was over. Sweats in some instances were drenching in their severity.

In the spring of 1931 a number of cases of pneumonia occurred which affected the lower lobes and were associated with severe diaphragmatic pleurisy. One result

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was the difficult complication of empyema between the diaphragm and the base of the lung. In the present series of 1932, although there was extensive pleurisy, which in some instances was audible at the diaphragmatic level on both sides of the chest, in front and behind, there was fortunately only one instance in which possibly such an empyema resulted.

The case, however, of a woman, 63 years of age, was one of great difficulty, for a double pneumonia with pleurisy affecting both lower lobes supervened upon an extremely severe herpes round the costal margin, which had left much recent scarring. Post-herpetic pain, which at times was almost unbearable, had followed. This symptom, combined with the dullness caused by the pneumonia and pain by the pleurisy, presented a clinical problem of great perplexity. Added to all these complications were a diagnosis by radiography of a pulmonary new growth, the removal of 10 oz. of blood-stained fluid from the left pleura, and fever which lasted for thirty-two days after admission to hospital. In spite of the patient's age, the extreme prostration, the continuous pain, the prolonged fever, and extensive pleuro-pneumonia, she eventually made a good recovery.

An Army officer, aged 62, came into hospital a livid grey colour, with a pneumonia which implicated both upper lobes and the right lower; his respirations were for eleven days between 40 and 50 a minute, and for long intervals he lay in a stuporous sleep. His recovery was as remarkable as it was heartening, for he was a splendid patient.

There were two fatal cases in the series, and both were tragedies. One was a little boy, aged 3 years, who was admitted to the Children's Hospital, Great Ormond Street, with bilateral broncho-pneumonia. For thirteen days he ran a high temperature, which then subsided, and he improved so greatly that convalescence appeared to be at hand. Suddenly he became much more distressed, and died. The post-mortem examination disclosed confluent broncho-pneumonia, with small abscesses and haemorrhagic hepatitis.

The fatal case in the adult was a young man of 23, with double pneumonia. Unfortunately there was no post-mortem examination, but a loculated empyema was opened and there was every reason to suspect that there was in addition a considerable pulmonary abscess, if indeed this abscess was not the primary focus of pus formation. The pus grew staphylococci and a Gram-negative bacillus.

In this series there occurred that clinical feature so misleading and so difficult to teach at the bedside—namely, the commencement of a pneumonia by what may be described as a smothering of the air entry with no alteration in the percussion note, and often no other physical signs, or at most some extremely fine and scattered rales. This sign would later develop as a frank pneumonia or in a shower of sharp rales suggestive of the milky way on a fine September night.

A rise in the number of polymorphonuclear leucocytes, coupled with the development of areas of bright, consonating rales, made it probable that small pulmonary abscesses had developed in some of these cases, which healed as convalescence proceeded.

The treatment in all cases was essentially on the same lines, and doubtless open to criticism in many respects. That only two cases were fatal I attribute first to fine and courageous nursing and the skilled observation and assistance of my house-physician, Dr. C. Gray; secondly, perhaps, I put that stolid obstinacy of a West Countryman which admits that an apparently dying patient is rather ill, and thus insensibly gives hope to the patient, nurses, and all concerned, when, tired by their efforts, they must

naturally feel inclined to lose heart. I mention this on account of the great trouble in which I found myself when, after a few cheerful words, I turned to a valued sister and said, "I suppose you realize how ill this patient is?" Her rage at my having told the truth so long after she had known it confirmed my belief in the value of an ox-like heredity. Thirdly, I would put the great value of digitalis, morphine, and atropine, strophanthin, alcohol, and liquid peptonoids. I am aware that in writing thus I am an outcast possibly from scientific medicine, and also an object of opprobrium to hospitals in this economic crisis, and to the enemies of alcohol, to whom I would venture to praise the value of a good liqueur brandy. The preparation of digitalis I used was digiglusol, and I was well satisfied. Fourthly I put an atmosphere of calmness with non-disturbance of the patient, and was devoutly thankful for the intense drowsiness and semi-coma that some of them showed, reducing them, as it did, to mere breathing machines. Fifthly, and I suppose those who read this note would put it first, I would mention "good luck."

A successful serum administered early would naturally make this treatment obviously inadequate, but these patients came under care too late for such a serum in the present state of its evolution, and I hope that this short review of severe cases may be some encouragement to others when struggling with similar ones.

ACUTE MASTOIDITIS *

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This disease is so diverse in its manifestations that it still offers many problems to specialist and practitioner alike, problems inadequately dealt with even in the best textbooks, which are concerned to describe only what one might term the "normal" case. I would go so far as to say that in acute mastoiditis there is no such thing as a "normal" case.

ANATOMICAL AND DEVELOPMENTAL CONSIDERATIONS

In regard to the development of the ear, the Eustachian tube deserves mention if only to emphasize that by its origin from a recess in the primitive pharynx it early establishes a connexion between that cavity and the middle ear, which arises in its own expanded outer end. It is almost superfluous to stress the fact that the overwhelming majority of middle-ear infections pass up through the Eustachian tube, the micro-organisms being derived from foci in the tonsils, adenoids, or nasal fossae. That mastoid infections are the result of a direct spread as opposed to a blood stream infection has a considerable bearing on the course of the disease.

The development and anatomy of the mastoid is, in spite of the uniformity of its external contour, in marked contrast to that of the other important elements of the auditory apparatus, which are almost completely rigid and unvarying. The mastoid itself is derived from the petrous and squamous portions of the temporal bone, which early in the history of the embryo fold themselves round the primitive otocyst containing the germ of the internal ear. The structure of this enfolding mass is, so to speak, a more fluid one, with the result that a large number of variations of internal structure are possible in

* A summary of an address given to the West Norfolk Division of the British Medical Association on December 18th, 1931.