# SOCIETIES' PROCEEDINGS.

## ROYAL SOCIETY OF MEDICINE—OTOLOGICAL SECTION.

*November* 20, 1914.

DR. ALBERT A. GRAY, *President of the Section, in the Chair.*

### Presidential Address.

GENTLEMEN,—The problems in otology already solved by otologists are very considerable. If we look back twenty or thirty years and remember how little we knew and what a small amount we could do, even for a case of suppuration of the middle ear, to relieve patients from their ultimate fate, and when we see such cases now treated successfully, both by means of operation and without, we shall appreciate how much advance has been made. We must consider how many lives have been saved, and how frequently hearing has been restored, or at all events improved. This certainly gives us hope for the future.

But we have now to consider what difficult problems lie before us. Take the cases unassociated with suppuration or with catarrhal conditions; how very misty the subject appears to us. We may first try to explain why it is that there is such a sharp line between those cases associated with catarrh or discharge on the one hand, in which we can forecast complications and do something to alleviate, and those case the other hand, concerning which we are still very much in the dark. I think the explanation will be found to be this: With the discoveries of Pasteur and Lister of the influence of micro-organisms in producing disease the whole medical profession began at once to turn their energies into that channel. Bacteria received great attention, with the most wonderful results in all branches of medicine. Innumerable investigators sprang up to make a special study of this subject, and we know what remarkable consequences have followed. It has been said that there is the soul of good even in things evil. I submit that it is equally true that there is the soul of evil even in things good, because this extraordinary development of bacteriology entirely absorbed minds which might otherwise have devoted their attention to other aspects of pathology. Consequently, for many years the tissues and their manner of response to the invading bacteria were practically left out of consideration. The bacteria were considered as everything, the man as nothing. But, obviously, there cannot be disease without an animal—man or other. Disease, after all, is response to injury, whether by toxins of bacteria or other origin, or by chemical or physical agents. Therefore, the outstanding factor is not the organism or the poison, but the tissue that responds. If individuals were exact replicas of each other, then the same disease would always present exactly the same clinical phenomena. Cases of pneumonia would always have the same temperature, and the rise and the crisis would occur on the same day, the same hour. But no two individuals are alike! Consequently, when a poison or an injury affects the tissues we may give the condition a certain name, but it is never in the strict sense the same disease in all.

https://doi.org/10.1017/S1755146300014876 Published online by Cambridge University Press

There are, however, a number of diseases which, apparently, can only affect certain individuals, whatever the environment may be; and in regard to these diseases we may say that the individual is by far the more important factor, the environment the less important. We may take, as an extreme example, Daltonism. No unfavourable environment will make the ordinary human being the subject of Daltonism. The condition must be innate, that is, inherited from parents or ancestors, or arising spontaneously. A much less extreme example, but still very noticeable, is arteriosclerosis. No doubt the majority of people can be made to suffer from arteriosclerosis; but a certain percentage of individuals might subject themselves to all kinds of unfavourable conditions, lead outrageous lives, and dissipate themselves in many ways, and yet live to a green old age! Others, though living careful and well-ordered lives, may suffer from arteriosclerosis in comparative youth. A disease of which we see a good deal in otology is otosclerosis, and it is similar to arteriosclerosis in this respect: It may appear in generation after generation of a family, though the victims may live in the most perfect surroundings, and with no apparent external cause acting at all. It seems as though in such individuals the tendency in the fertilised ovum is so strong that the disease will come into existence, no matter what the environment may be. In spite of this, it remains true that in a large number of cases unfavourable circumstances are undoubtedly effective in producing otosclerosis. I am sure all of us must have seen cases of otosclerosis in which the exciting cause has been typhoid fever, prolonged anæmia in the form of chlorosis, pregnancy, and several other conditions. On the other hand, how very few people suffering from these general conditions become otosclerotics. It is obvious, therefore, that in otosclerosis the personal equation in large part determines the onset of the disease.

The question arises, why should that be? The tendency must be inherent, and must be passed down from parent to offspring. And yet if we try to arrange these cases of otosclerosis in accordance with the so-called Mendelian principle, we shall find that they do not group themselves in the way that colours of plants and heights of peas and beans do—characters which apparently do follow the Mendelian law. In otosclerosis we find the expected numbers are sometimes diminished, sometimes exceeded; and the same is true of arteriosclerosis.

In regard to inherited neuroses, Dr. Mott has a very interesting paper in the *Archives of Neurology*,[1] and he came to the conclusion that these conditions cannot be brought into relationship with Mendel's law. And yet there is no doubt that the Mendelian law, generally speaking, is true in regard to certain characters. As far as I can make out, Mendel's law applies to those hereditable conditions which are part and parcel of the race or species. For example, Mendel mixed a pure strain of short peas with one of tall peas, and of the offspring some were tall, some short, but none medium. Shortness and tallness, however, are inherited qualities, and they are destined to appear from the beginning. The same is true of such a condition as night-blindness and Daltonism; they are, clearly, inherited conditions absolutely independent of any external agency or environment. Consequently, those oculists and biologists who have examined into the inheritance of night-blindness and Daltonism find that those conditions do come under the Mendelian law. But when we take arteriosclerosis, otosclerosis, and the neuroses, we find that they do

[1] *Arch. of Neurol. and Psych.*, 1914, vi, pp. 79–98.

https://doi.org/10.1017/S1755146300014876 Published online by Cambridge University Press

not come within that law. The reason, I venture to think, is not very difficult to find; it is that these pathological conditions are to a certain extent dependent on external environment; they are only *potentially* going to occur. The individual, with few exceptions, is not definitely destined to suffer from arteriosclerosis, for a considerable number of the cases depend upon some unfavourable environment.

If we probe still further into this matter, we shall find that those diseases in which the condition only occurs when, in addition to an innate tendency, a certain environment is also necessary are characterised anatomically by the fact that the process of repair is deflected from its normal course. For instance, in the case of arteriosclerosis, such a poison as lead introduced into the system will act on the arterial walls and cause injury. Consequently, certain cells will divide and multiply, probably a great many are destroyed, and some of the highly specialised cells, which have comparatively little power of reproduction, will be at a great disadvantage compared with those of the fibrous tissues, which have great capacity for reproduction. Hence the individual will begin to have an increase in the fibrous elements in the walls of his arteries, and a decrease in the more highly specialised muscular ones. Therefore, it is not surprising that such diseases do not manifest the Mendelian principle; they depend to a certain extent on some unfavourable environment. The individual who is liable to suffer from arteriosclerosis and otosclerosis, because of his inherited tendency, needs also that other conditions should come into play before the disease will come into existence. Even malignant disease, if we take it locally, indicates to a certain slight extent an inherited tendency. But irritation of the part will establish the disease when it might not otherwise have shown itself.

My remarks, I fear, have been rather disjointed, but I cannot help thinking that the line of future study, not of otology only, but of pathology in general, lies in a consideration of the tissue cells—as to why they undergo certain changes.

We talk of repair, but what is the biological significance of the process of repair? Taking the case of repair of a wound in the skin, we have a fair idea of *how* that process takes place. We know how the fibrous tissue cells divide, we know how the leucocytes come from the blood-vessels, how the epithelial cells grow and form a harmonious union of the connective tissue cells, and so on. We know that the epithelial cells change their character and become phagocytic, and the same is true of the fibrous tissue cells. That is to say, we have a fairly good knowledge as to *how* repair takes place. But, curiously enough, I have never, in all my reading and in all my communications with pathologists and physicians, heard the question asked, "*Why* does a wound heal?" Why, when we injure the tissues, does repair take place at all? That is the problem before pathology. Why does not the wound remain open as a raw surface?

When we solve the problem as to why repair occurs under normal conditions we may be in a position to say why it does not occur in certain other conditions, such as malignant disease, arteriosclerosis, otosclerosis, and many more. We shall not solve the problems of pathology by knowing *how* repair is carried out, although that is extremely important; we shall have to know *why* it is carried out.

The problem will be difficult to solve, because no amount of observation of clinical facts or physiological or pathological experiments in laboratories or outside of them will suffice. What is required is the highest of all the intellectual qualities—imagination.

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**Cerebello-pontine Tumour.—W. M. Mollison.**[1]—The brain of the patient shown to the Section last year; the patient having died some weeks after operation. A tumour is seen occupying the base of the brain mainly about the left cerebello-pontine angle: there is an extensive hæmorrhage into the growth, and occupying the left-hand side of the mass is a cystic cavity (opened at the operation). Microscopically the growth is a glioma.

Mr. C. E. West said the point in the case which particularly interested him was the distension of the upper and lateral part of the fourth ventricle, simulating a cyst. Presumably t was cerebro-spinal fluid, not cystic fluid in the sense of the contents of a cystic growth, which ran out of the wound. He doubted death from exhaustion if by that was meant exhaustion due to loss of cerebro-spinal fluid, unless the patient showed signs of inadequate fluid in a general way, similar to those of continued hæmorrhage. He once nearly killed a patient by withdrawing a large quantity of cerebro-spinal fluid, but she rallied and recovered, and, he thought, was still alive. He had withdrawn as much as 500 c.c. of that fluid in twenty-four hours without the patient showing signs of distress, and if the patient were kept well supplied with fluid he could stand great drains of his cerebro-spinal fluid. Mr. Mollison presumed against himself that there was some infection of the meninges in this case, but the specimen did not show any grounds for that conclusion. Such patients as these died, and on the *post-mortem* table one could not say why, and that was particularly true of malignant cases. One case which he saw, but did not attempt to operate upon, had vertigo as the earliest symptom, and was pronounced inoperable by a very eminent cranial surgeon in London. After exploration he was subjected to X-rays through a decompression opening in the occipital region repeatedly. He was a student, and that was done two and a half years ago. Since then the patient had qualified.

Mr. G. J. Jenkins said the point of interest to him, as it had been to Mr. West, was the association of a tumour and a cyst, and he asked whether Mr. Mollison could offer any explanation or suggestion to account for that association. It was curious that the whole of the fourth ventricle was dilated, and that the dilatation involved the left lateral recess of the ventricle—in the region of the cornucopia. It was possible that this recess had formed the cyst. It was difficult to see the anatomical formation in the specimen, but the association of cyst and tumour was interesting. Might there be a section of the lining membrane of the cyst? as it would be important to know its histology in coming to a conclusion as to the nature of the cyst.

Mr. Mollison replied that Dr. Wyatt Wingrave told him before the discussion that he had a similar case, which was a papilloma of the choroidal plexus, and that microscopically it was either an endothelioma or an epithelioma. In the light of that knowledge, perhaps one might change one's diagnosis in this case to endothelioma; though the microscopical difference between the two was a very subtle one. Dr. Johnson, who had specialised in the pathology of the brain, reported it was a glioma, with neuroglial elements in it. He would read Dr. Johnson's report: "Histologically the tumour exhibits the structure of a glioma. In parts the section shows typical neuroglial formation. The ground substance consists of a delicate protoplasmic network formed by the branching processes of the tumour cells. The nuclei of these latter are

[1] See Journ. of Laryngol., Rhinol., and Otol., vol. xxix, p. 315.

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large and well defined, and are surrounded by a thin layer of protoplasm. Occasionally small areas of degeneration occur, which appear to be early collections of fluid between the cells. In other places, possibly the more rapidly growing portions of the tumour, the cells are more closely packed, and the ground substance is proportionately less. Here the appearance approximates somewhat to a sarcomatous condition. This tendency, however, is insufficient to justify the application of the term 'glio-sarcoma' to the specimen." Dr. Johnson mentioned that there was some degeneration, with fluid between the cells, so a possible explanation of the cyst would be that it was an extension of that process over a large area. Mr. Jenkins made to him an excellent suggestion for the presence of the fluid, namely, that there was some nipping by the growth of the choroidal plexus, and consequently a kind of œdema behind.

**Syphilitic Ulceration of the External Auditory Meatus.—W. M. Mollison.**—W. C——, aged thirty-two, has been attending as an out-patient, suffering from a chancre. This has been treated by means of mercurial injections. Six weeks ago a boil appeared in the left ear; this has been discharging ever since. The external auditory meatus and tragus on the left side are the seat of an ulceration. The meatus is so filled with flabby granulations that the membrane cannot be seen. There seems to be little or no pain in connection with the ulceration. The soft palate shows a condition of superficial ulceration.

**Slides illustrating Lumbar Puncture Fluid in Aural Cases.—Wyatt Wingrave.**—Cerebro-spinal infection in *chronic* aural cases is usually polymicrobic; in *acute* cases monomicrobic. Lumbar puncture for first or even second "tap" is often negative, due partly to localisation or to slow circulation of fluid. Chemical and physical characters are also profoundly affected; their significance consists in absence of sugar, presence of acid, increase in specific gravity. Early appearance of cytological changes in labyrinthine complications.

**Carcinoma of the Pinna.—C. E. West.**—W. A——, aged sixty-nine, male. Seven years ago patient had a hard wart on the left cheek. This was excised, but returned quickly. It was destroyed by carbon dioxide snow and has not returned. For several years he has had a warty growth on the dorsum of the wrist, and lately a small papilloma at the inner canthus of the right eye. Eighteen months ago a small ulcer appeared on the left ear; this has rapidly increased lately. Patient has not used tobacco and alcohol for thirty-four years. Blood gives a negative Wassermann reaction. On admission to hospital, September 4, 1914, there was a large, ulcerated, septic growth involving the inner aspect of the tragus, the external meatus and concha on the left side. The tissues on the posterior aspect of the pinna and over the mastoid region were œdematous and brawny, and one or two small glands could be felt in the upper part of the anterior triangle of the neck.

Operation, September 9: A racket-shaped incision was carried round the pinna, including the area of the mastoid and about three-quarters of an inch of the skin of the cheek. The skin was raised anteriorly up to the margin of the parotid, and the superficial tissues were dissected from the gland with the parotid fascia backwards to the meatus. Above, the tissues were raised down to the temporal fascia, and behind down to the bone. When the meatus was reached, this was separated from the bone, and the pinna removed with the surrounding tissues *en bloc*. An extensive



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radical mastoid operation was now carried out, with a wide exposure of dura mater above and the removal of the whole of the bony walls of the meatus except a small part of the deepest portion of the floor. The facial nerve was not exposed in this part of the operation. The handle of the racket was now lengthened for some 3 in. over the sterno-mastoid, the muscle was detached from the bone, turned down, and transfixed and ligatured and cut away. Beginning from the under surface of the petrous, the substerno-mastoid tissues were dissected off the carotid and jugular, and as far forward as the attachment of the stylomandibular ligament and posteriorly from the apex of the posterior triangle, and this dissection was carried down as far as the level of the cricoid cartilage, in a continuous sheet. The neck wound was closed and drained at the lower end. Some branches of the facial nerve were known to have been divided at their exit from the parotid, and it is probable that the trunk of the nerve was injured in the deep dissection on the under surface of the petrous. The wound granulated well, the edges rapidly drawing in, and on October 21 the cavity was lightly curetted under cocaine and adrenalin and a graft applied. There was at first a considerable diffuse induration round the cut end of the sterno-mastoid, but this has gradually diminished.

The case is shown as an illustration of the removal of a primary growth with its surrounding area and lymphatic territory in continuity. The amputated pinna and a section of one of the glands in the mass of tissue from the neck were exhibited.

Mr. West added that, as he said in the notes, the case was shown to illustrate the removal of a primary growth with its surrounding area and lymphatic territory in continuity. Both the partial success and the ultimate failure hinged upon that. He ought further to say that the man had that afternoon been demonstrated to have palpable glands above the left clavicle. The ideal thing to have done in such a case was to do a complete dissection beneath the sterno-mastoid and in the whole of the posterior triangle at the original operation, and as this patient showed very little bad effect from the operation, he believed he would have stood that being done. But the difficulty would be to get him up to the operating table a second time, even though he was so grateful for the relief which had been given him. It illustrated how wide an area ought to be included in the operation in these cases, either all at the primary operation or as an immediate sequel, in order to secure freedom from recurrence.

Mr. G. J. Jenkins considered that the result was a remarkably fine one for such a condition. The patient was of the type in which recurrences were apt to take place; the multiple papillomata indicated his cancerous tendency. In infirmaries these people were looked upon as likely subjects for cancer. This patient had had papillomata, some of which had been cured by radium.

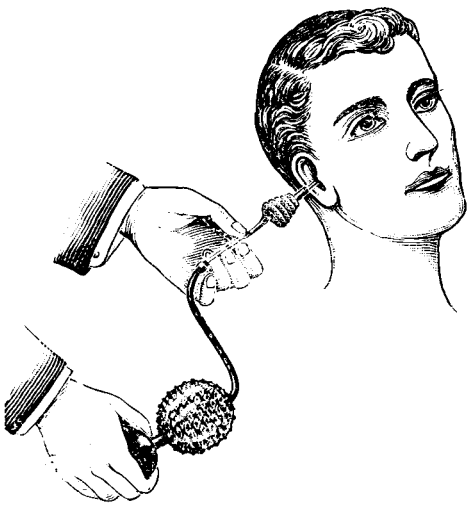
The President said that even though recurrence might take place, and indeed probably would, the great point was that the terrible condition had been obviated which ensued from ulceration about the meatus, which involved the bone. Even if he had recurrence in the glands near the clavicle, he would not suffer as he would have done had the operation not been undertaken. The way in which the grafting succeeded was particularly fortunate, and showed how thoroughly the malignant tissue must have been eradicated.

Mr. C. E. West confessed that, personally, he fought malignant disease to win, not merely to delay death; consequently he was dis-

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appointed at the signs of recurrence. He agreed with Mr. Jenkins that this patient was a typical example of the type of person who developed squamous carcinoma in some part, and one who was likely to have a local recurrence. But he did not feel that this absolved him from the disappointment that there should be a recurrence in the glands, because he did not think glandular recurrence had a bearing on the question of the liability of a new primary epithelioma developing if the patient should live long enough.

**A Cold-air Labyrinth Testing Apparatus.—J. Dundas Grant.**—The apparatus consists of a metal tube covered with an absorbent linen webbing and coiled in the form of a hollow cone. The free extremities of the tube are insulated by means of rubber tubing, of which a portion projects beyond the metal for insertion in the ear; the distal part of this is separated from the rest and can be easily changed to meet æsthetic or



aseptic requirements. The absorbent covering is well wetted with chloride of ethyl, and air is then blown through the tube by means of an ordinary spray bellows. In order to make the flow of air gentle and continuous it was found necessary to use a fairly strong secondary bag to the bellows and to choke very considerably the bore of the proximal end of the metal tube. When the air blown on the cheek is felt to have reached a high degree of coldness, the tube is introduced into the meatus of the ear so that the cold blast impinges directly on the tympanic membrane. Inflation is continued until nystagmus is, or ought to be, induced.

When the instrument is thus arranged the maximum of coldness is obtainable in from twelve to fifteen seconds and is kept up for about seventy-five seconds, when more chloride of ethyl can be added easily. In most normal cases the nystagmus is induced in an average of thirty seconds, the head being thrown back 60° beyond the vertical and the eyes being intermittently directed towards the opposite side at an angle of 50° from the middle line (Brüning's optimum position) and up to the ceiling.

The PRESIDENT asked whether there was any possibility of doing

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harm to the membrane by such an apparatus. The use of ether, of course, would bring the air down almost to freezing temperature. He supposed that when it was put into practice the test would be standardised.

Dr. URBAN PRITCHARD referred to a case in which it was intended to incise the membrane, but the surgeon thought he would try local anæsthesia. He sprayed in the ether, and the patient dropped to the floor immediately, and the process had to be stopped.

Mr. O'MALLEY said that three years ago, in Vienna, he had an opportunity of using a somewhat similar apparatus, which was devised by Bárány. It had the usual spraying apparatus, with a double channel tube passing into a bottle which had some ether at the bottom. But this apparatus of Dr. Grant's seemed to be a considerable improvement on Bárány's, because it only impinged cold air on the meatal wall, whereas in Bárány's apparatus ether vapour accompanied the cold air, and he did not think it was wise to introduce a drug in vaporised form into the ear. Bárány devised it for use in cases of perforation of the tympanic membrane, in which he did not like to use cold water for fear of setting up otitis media. He questioned the advisability of introducing sudden cold to the membrane, and through that to the labyrinth.

Dr. JOBSON HORNE considered it would be advisable to know the effects of ethyl chloride in a cold-air labyrinth testing apparatus upon the normal subject before gauging its clinical value in disease. Doubtless time would show that the instrument had its usefulness and also its limitations and contra-indications.

Mr. E. D. DAVIS asked Dr. Grant if his apparatus could be modified for the use of hot air in addition to cold. It was suggested that a movable chamber for hot water could be placed within the spiral tube.

Dr. DUNDAS GRANT replied that he had seen no harm result from the use of the apparatus. He could conceive such occurring as the result of spraying ether into the ear, as had been suggested by some writers. The lowest temperature he had obtained, tested by a thermometer, was 44·6° F., or $7\frac{1}{4}$° C., which was still considerably above freezing temperature. In reply to Dr. Jobson Horne, nystagmus, in Brüning's position, was caused in about twenty-eight seconds after the apparatus had been well cooled. After compression during ten or twelve seconds it was found to be quite cold to the cheek. In about twenty-eight to thirty-two seconds later (the time at which nystagmus appeared normally to occur) the temperature was down to about 48° F. He agreed it might advisably be standardised in detail, and he had tabulated the rise and fall as observed at intervals of five seconds. The idea of using it also for heated air had occurred to him, but he had as yet done nothing to carry the idea out. The essential feature of the apparatus exhibited was its portability and convenience.

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