anthracis, likewise inoculated in the rabbit's ear, but quickly passing into the blood."

Of still more practical importance, however, are the discoveries of Pasteur and Greenfield: first, as to the agencies by which these infective particles may be conveyed even to the grass upon which animals feed; and secondly, as to the fact, now well corroborated by others, that the virulence of these infections can be attenuated, so as to obtain fluids that will not produce fatal results when inoculated in healthy animals, but which will confer complete protection for the future against further infection. Pasteur's researches on the so-called "fowl-cholera" and on splenic fever open up an entirely new field for research, which is of immense interest to all who are specially concerned with preventive medicine. It would seem, from these experiments, both possible and probable that, in the course of a few years, we shall be able to avert many of these destructive diseases, not only from our cattle and "our feathered friends", but also from our own species. These observations, in fact, take vaccination out of the domain of empiricism, and bring it within the range of biological science. There are, moreover, some other of Pasteur's observations on the possibility of the renewal of virulence of these fluids in the bodies of very young animals, that are of great importance in relation to the spread of disease amongst human beings.

I conceive that this subject is one well worthy of the study, not only of medical officers of health, but of all medical practitioners; and it is one that can only be inquired into by those who are in a position to examine the details of an epidemic. It is not impossible that these inquiries would throw light upon the now obscure question of the regular periodic return of many of these diseases. I have myself suggested that the regular cyclical visitation of epidemics may be accounted for by the supposition that a certain density of the susceptible population is necessary to their spread; and I still think that this is the most probable hypothesis, but it would not preclude the concurrence of other influences.

We might also refer to the critical observation of practical men, the researches of Professor Pettenkofer, of Dr. Thiersch, and of Dr. Burdon Sanderson, on the intensification of the virus of cholera when left in contact with certain forms of organic matter. I suspect that medical officers of health see only too many instances of the fostering power of dirt, and of the increase of fatality of epidemic disease in filthy districts. It would probably need no great length of time to produce well-authenticated facts in support of the above-mentioned experiments, though it may be doubted whether the disease-germs show much discrimination as to what particular kind of dirt they prefer.

The determination of the germicide power of various disinfectants has also been, to some extent, worked out in the laboratories of men of science; but their conclusions still require to be submitted to the test of actual practice, and evidence on this point still needs collecting from the experience of our various local authorities.

On the whole, there is little reason to fear that scientific researches will be wanting in the future; the subject has now been earnestly taken up, not only by individuals, but by many scientific societies, and we shall probably soon reap the fruit of their most important work. Before we leave the subject, however, in the hope that it may receive attention from men of science, I would venture to point out that there is yet much to be discovered with regard to the relations of the unformed ferments to the various living forms conceived in these actions. M. Berthelot was, I believe, the first to show that from yeast a peculiar glycosic ferment could be obtained—a substance like the pyrogen of septicæmia, not organised, which can be separated from the producing organisms, and which, though unable to change sugar into alcohol, can almost instantaneously produce a true fermentative action on cane-sugar (*Comptes Rendus*, vol. I, p. 980).

More recently, M. Toussaint has shown that, although the filtrate from blood containing the *Bacillus anthracis* it no longer gives rise to the organism in a cultivating fluid, and is unable to convey splenic fever, yet, if injected in considerable quantity into the circulation of a healthy animal, it confers complete immunity to the disease. It is certain that the unformed ferments are just as specific* in their operation

as the several organised forms concerned in these diseases; and the relations that they hold to each other are well deserving of further study.

I cannot but think that the anomalous behaviour of many cases of diphtheria and of enteric fever would be explained by such an investigation. But I must not trespass any further upon the time of our Section. I have only touched upon a few of the points that would seem to make it probable that an effort for a thorough study of these diseases would now be successful if made with the aid that can be given to it by our great Association: and, in order to end with a practical suggestion, I would propose that our Section should submit the subject to the Committee on Combined Observation, whose appointment will, I am sure, make ever memorable the Ryde meeting of this great body.

AN ADDRESS

DELIVERED AT THE OPENING OF

THE SUBSECTION OF OTOTOLOGY,

At the Annual Meeting of the British Medical Association,
in Ryde, Isle of Wight, August 1881.

By URBAN PRITCHARD, M.D., F.R.C.S.,

Aural Surgeon to King's College Hospital; Chairman of the Subsection.

AURAL SURGERY AS A BRANCH OF GENERAL MEDICAL EDUCATION.

GENTLEMEN,—I propose calling your attention to what I consider to be one of our great shortcomings in general medical education—I refer to the absence of practically any study of ear-disease—believing that, in what I am about to say, I shall but echo the sentiments of my otological colleagues.

How is it that our friends, who form what has been truly styled the backbone of the profession—I mean the general practitioners—are so lamentably ignorant of the elements of aural medicine and surgery? Nay, I must go further, and ask—How is it that consulting physicians and surgeons are equally ignorant in this matter? I trust that I shall not be giving offence to anyone by this plain speaking. This lack of otological knowledge is not nearly so marked among the profession on the Continent or in America. Why should it be so in our country? I believe it is chiefly due to two causes: first, a profound contempt for aural surgery; and, secondly (of which this contempt is a natural outcome), a want of knowledge of what aural surgery can do for ear-disease.

Gentlemen, let us endeavour, individually and collectively, to remove these false ideas. If we, in this generation, succeed in awakening in our fellow-workers a sense of the importance of this branch of study, we shall indeed have done good work.

In order to remove the first false idea—*i. e.*, contempt for aural surgery—let us point to the evils which are likely to result, and which do result, every day, from ignorance of the merest elements of this subject. For example, when a practitioner is at a loss, he frequently gives this advice: "Let the child alone, he will grow out of it." This is a very common form of expectant treatment, or, I should rather say, a very *callous* form of it. Should the case be one of pharyngeal catarrh (a frequent cause of deafness in children), to leave the case alone usually means neglecting the opportunity there is of curing the disease, and letting it drift into an incurable condition. Or, should it be a case of otorrhoea (external or internal), not only may all chance of cure be let slip, but serious complications may result. Of course, I allude to disease of the bone, meningitis, abscess of the brain, or pyæmia.

Sometimes a patient is actually told not to have the discharge stopped, just as if it were a healthy condition. This is no doubt a remnant of the age of humoral pathology, when it was thought advantageous to have a discharging surface, "to let out the bad humour", what-

almond oil, prussic acid, and sugar; but the albumen of other plants is incapable of producing the fermentation. It is also unaffected by rennet, by pancreatic juice, and by saliva. Tannin is converted into gallic acid by the pectase of gall-nuts and of turnips; but emulsin, vegetable or animal albumen, and legumin, retard rather than promote the transformation; and Dr. Schunck has shown that some of the well-known fermentative substances, with the exception of emulsin, are able to effect the decomposition of rubian, which has its own peculiar ferment erythrazym. Something of the same kind of specific action is to be noted in the fermentation of the different forms of sugar, inositol and dulcitol, manna, etc.; and when we consider the phenomena of the ripening of fruit, it becomes highly probable that the vegetable ferments are to be counted in myriads, and that almost every fruit has its own individual form of unorganised ferment.

* No one can doubt the specificity of the unformed ferments, who remembers the special offices of the many ferments within the animal body, not alone of the digestive ferments, but also of the blood-clotting ferment, the glycogen ferment, and many others. It is, perhaps, not so well known what a variety of action is to be found of various ferments upon the many isomeric bodies included in the group of starches and sugars. Thus starch itself is transformed into dextrin and glucose by diastase, by ptyalin, and by many other animal substances; but the isomeric substance inulin is unaltered by diastase, vegetable mucilage is not affected by saliva, and assamar is not fermentable at all. Cellulose, on the other hand, is fermented by a peculiar ferment which does not act on starch. Black mustard flour, or myrosin acid, produces the essential oil of mustard and glucose under the influence of myrosin; and amygdalin is changed by emulsion, obtained from a limited number of plants, with bitter

ever that may have been. But I doubt whether, even then, suppuration from the eye was considered healthy, for the simple reason that the evil was apparent, was visible; for we know—

“What the eye does not see, the heart does not grieve.”

So much for negative results. But this contempt also leads to injurious treatment, which is a very positive evil. For example, forcible injections in cases of deafness from depressed membrana tympani—how much harm must result from indiscriminate syringing there? Then there is that common practice of dropping irritating fluids into the ear in cases of earache, which earache, of course, usually means inflammation of the parts.

Again, there is the dangerous proceeding of introducing instruments into the ear in search of foreign bodies, which frequently are not there at all. But the energetical surgeon does not easily give up the search, and renews his efforts, until the organ is severely injured, sometimes even resulting in the death of the patient.

Turning to the second cause—namely, a want of knowledge of what aural surgery can do for ear-disease—that must be met by impressing on our fellow-practitioners the advantages that have been derived from such treatment, constantly bringing to their notice cases which have been cured or improved. Especially should we bring forward the improvable cases, which are by far the larger class; because there is an idea floating about among the profession that ear-disease may be divided into two classes, *curable* and *incurable*, and that between these there is—nothing.

This is a great mistake. Of all the senses, hearing is, perhaps, the one that admits of most gradation of power; and, therefore, common sense would suggest that deafness, the result of disease of the organ, would admit of every degree of improvement.

Let us—I speak now to those who are teachers of this subject in our schools (and I am glad to say that we are a much larger body than we were a few years ago)—I say, let us teachers do all in our power to interest the rising generation of students in the study of this branch of medical knowledge.

In conclusion, I would ask, Can we not do something to induce our examining bodies to include aural surgery in their examinations? I do not mean that candidates should be expected to have gone deeply into the subject, but I do contend that they should be required to show that they understand the elements of it, and that they have attended a certain number of lectures and clinical demonstrations.

Gentlemen, these are the points to which I was desirous of calling your attention, and, although it is not usual to discuss an opening address, I should be extremely glad to hear the remarks of any present. If my opinion be shared by my audience, I should be very pleased if we could form a committee to consider the best means of inducing our examining bodies to include aural surgery in their list of subjects for examination.

ST. GILES.—In a recent report to the St. Giles Board of Works, Mr. Lovett gives some particulars as to the movement of the population in the district since the census of 1871, which, in view of the immense changes that have taken place there under the operation of the Artisans' Dwellings Acts, are very interesting and instructive. Since 1871, the population of the registration sub-district of St. George, Bloomsbury, has declined from 17,843 to 16,662, of St. Giles South, from 19,089 to 14,862, or a decrease of 4,227; and of St. Giles North from 16,497 to 13,733, or a decrease of 2,764, showing a total decrease of 8,172, in a population of 53,429. This decrease is chiefly owing to the carrying out of the Artisans' Dwellings Acts of 1868 and 1875. As far as the latter Act is concerned, the loss is only temporary, for the 1679 persons displaced by the demolition of houses in the Great Wild Street area will probably be re-housed there by the end of the present year. But it is different under Torrens' Act of 1868, for the properties pulled down under that Act, either have not been rebuilt, or they have been converted into warehouses, the owners making no provision for the accommodation of the people displaced. Mr. Lovett thinks that the application of Torrens' Act in the district, by sweeping away unwholesome houses, has certainly improved it, but it has also turned numbers of the poor adrift to seek for lodgings in other parts of the Metropolis. This is certainly one of the most difficult questions that have to be grappled with by the Legislature; and it is to be hoped that its importance will not be lost sight of.

EAST DEREHAM.—Only 19 deaths occurred in the district during the second quarter of the present year, but Mr. Vincent is unable to state that the health of the town is satisfactory. Small-pox has broken out, and 4 cases had already occurred at the date of the report, while it is believed that many more existed under the name of chicken-pox. A decided improvement is noted in the removal of refuse, etc., the scavenging arrangements being undertaken by the Sanitary Authority.

AN ADDRESS

ON THE

LOCAL AND GENERAL TREATMENT OF MALIGNANT TUMOURS OF THE BREAST, AND OTHER EXTERNAL PARTS.

Delivered at the Surgical Section of the International Congress, held in London, August 5th, 1881.

By M. SEMMOLA, M.D., Professor in the University of Naples.

[M. SEMMOLA commenced his remarks by stating that he was not a surgeon, and therefore apologised for addressing surgeons on a surgical subject. The treatment of malignant tumours by electrolysis was no new idea; twelve years ago, two cases of cancer of the breast had been treated in this way by an American surgeon; since then, Althaus had declared himself against it as a curative method, and Ciniselli had maintained that, as only benign tumours were curable by electrolysis, it was simply useful as a means of diagnosing between malignant and benign growths. M. Semmola, considering these opinions were based on insufficient data, prosecuted the inquiry, with results which he stated in the following words.]

I have always thought that the electric current ought to be looked upon as a powerful producer of trophic changes, and hence useful in the treatment of malignant growths. In the radical treatment of malignant tumours, the most important point to arrive at is the production of a change of direction in the local nutritive processes that the fatal evolution of the neoplasm with all its consequences may be arrested; that is to say, to substitute an innocent morbid process in the place of the primitive morbid process, which is capable, sooner or later, of poisoning the whole organism. Tumours may be destroyed or removed by the actual cautery or the knife, but they are powerless to modify the chemical processes of the surrounding tissues; consequently, electrolysis is far superior to them, for it does not only destroy, but it directly modifies the chemical processes of local nutrition, and hence is capable of completely changing the direction of these nutritive processes.

Without discussing here to what degree carcinoma and sarcoma are purely local diseases, and to what extent constitutional causes influence their production, it is evident that methods of cure must be at the same time both local and general; that is to say, while on one side the neoplastic element must be destroyed, and the perverted direction of the local nutritive processes modified, on the other, the nutritive changes must be energetically stimulated and improved, particularly by exciting excretion of harmful substances from the body. Thus, along with electrolysis, I have always given large and increasing doses of iodide of potassium, from a gramme up to three grammes (15 to 45 grains) a day, continued for a very long time. I have a patient who has taken three grammes a day for six months.

I believe that the chief reason for the failures which have been met with up to the present time in treating malignant new growths in accessible situations, has been that the treatment has been exclusively limited to local destruction, without modifying the general state of the organism, or because the attempt has been made to obtain resolution merely by the general action of medicines. This is, perhaps, not impossible, but it is a futile attempt at present, with the drugs which we possess.

The six cases which I have collected in the ten months during which I have occupied myself with these experiments, in which I have been aided by my learned friend and colleague Dr. Vizioli, Professor of Electro-therapeutics in the University of Naples, consist of one case of epithelioma of the right breast of the size of a large orange, fibro-sarcoma of the right breast, two sarcomata in the right breast, sarcoma in the left breast, and cysto-sarcoma on the upper third of the arm. In all these cases excepting one, the diagnosis was confirmed by eminent surgeons who had advised the removal of the tumour as rapidly as possible; and, in one patient, the case was that of a sarcoma produced eighteen months after another sarcoma had been removed from the same side. I know well how many doubts and errors may occur in the diagnosis of tumours, and that the verdict of the practitioner should never be given without reserve. In these cases, the best guarantees exist that the diagnosis was accurate and certain. In the first place, all the clinical characters were recognised by skilful colleagues, and microscopic examination was made in each case, in which I was assisted by one of our best professors