marked improvement in the death-rates from zymotic diseases is shown in the following table :

Average Annual Death-rates per 1,000,000 from the various Zymotic Diseases.

	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-Cough.	Typhus.	Enteric.	Simple.	Diarrhea and Dysentery.
1871-80 ...	245	379	719	121	513	58	326	105	916
1881-90 ...	46	441	338	163	451	15	198	25	661
1891-95 ...	20	408	182	253	398	4	417	8	630

No place gives better evidence than our own town of a diminution in the general death-rate and a marked improvement in the zymotic rate, as the following table will show :

Table showing the Death-rate, Zymotic Death-rate, and Birth-rate of Wigan from 1874 to 1897 inclusive.

Year	Death-rate.	Zymotic Death-rate.	Birth-rate.
1874	37.0	10.1	47.4
1875	32.2	6.3	47.4
1876	28.5	4.9	48.9
1877	28.8	6.9	47.3
1878	29.4	5.1	47.9
1879	26.7	3.2	44.8
1880	30.4	7.5	44.5
1881	25.1	3.7	42.7
1882	25.6	4.1	43.1
1883	27.4	5.1	41.6
1884	27.7	6.9	40.9
1885	23.7	5.8	40.1
1886	22.1	3.1	38.7
1887	25.9	5.2	39.3
1888	22.1	2.7	39.5
1889	22.7	4.1	37.0
1890	26.5	4.6	38.5
1891	24.7	3.7	39.7
1892	24.4	3.8	42.0
1893	24.2	5.1	40.6
1894	18.9	3.2	37.1
1895	22.5	3.6	38.0
1896	23.0	4.0	35.9
1897	20.9	3.11	37.1

The science of bacteriology, especially during the past fifteen years, has wonderfully increased our knowledge of infectious diseases, and from its further development we must expect further progress. Although for years cells, germs, and vibriones had been recognised as micro-organisms which produced disease, it was not till "pure cultures" of bacteria could be made that real progress was made in the application of bacteriology to the causation and prevention of disease. The first pure cultures were those obtained by Salomonsen in 1876.

In 1878 Lord Lister announced his method by which he had been enabled to obtain pure cultures of any organism, with which he was working, in sterile broth, but it was Koch who in 1881 first published his plan, which is now the well known gelatine method, and which is superior to any other for convenience and readiness of application, especially for pathogenic organisms. As Dr. Sims Woodhead has so well said in his article on the Birth and Development of Bacteriology in the Jubilee number of the *Practitioner* in June, 1897, page 683 :

This question of isolation and pure cultivation soon placed bacteriology on a footing of accuracy and security that it had not hitherto attained, and to it must be ascribed the enormous advances that have been made in our knowledge of the causes of disease and of the means of prevention and cure obtained within recent years.

The chemist and the sanitary engineer have also contributed much in improvements during the last quarter of a century, and although we have not yet attained to what is desirable in our supplies of pure water, or in the disposal of our sewage and excremental matters, or in the destruction of refuse matters, yet much has been done in reference thereto

during the last twenty-five years. The work that is being done in reference to the pollution of our rivers and streams would never have been dreamt of at that time, but now we have county councils watching with jealousy what shall and what shall not be admitted into them. Much, no doubt, yet remains to be done before we reach the Eldorado of sanitation. That others recognise the improvements in sanitation and the diminished sickness as a consequence is very plainly shown by a writer recently in one of our weekly magazines in a paper on Hints to Doctors, who says :

It has been said—many times—that for a doctor, more than for any other professional man, it is necessary to have patients in order to succeed. That, as a joke, is poor; but it is rich in practical suggestion. Doctors are always searching for, and finding, fresh diseases; and when they find them they give them names. They are really starting at the wrong end. A doctor, to be successful, should devote his time to finding patients, which, in these days of sanitation and diminishing death-rates are not so easy to find: the patients will find the diseases. He may trust the ordinary unscientific public to discover diseases, and even to name them. The most obtuse of men can discover a toothache in its earliest stages, and he can call it names, too—quite as many as the President of the Royal College of Surgeons can think of.

It is quite evident that the subject of sanitation, since the well-known dictum uttered by an eminent statesman, *sanitas sanitatum, omnia sanitas*, has made much progress and must still march on in the van of knowledge, causing the medical officer of health to become more and more a "specialist" in the true sense of the term.

In conclusion, gentlemen, allow me to thank you for your kind presence and attention, and beg of you to overlook the many imperfections in my humble attempt to address you.

REFERENCES.

¹ *English Sanitary Institutions*, Second Edition, 1897, p. 328. ² *Op. cit.*, p. 328. ³ *Op. cit.*, p. 367. ⁴ *Journal of State Medicine*, vol. v, No. 7, p. 302.

THE OLD AND THE NEW IN MEDICINE.*

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[ABSTRACT.]

DR. WEATHERLY commenced by acknowledging the honour conferred upon him by the Branch in electing him President and by assuring the members that his best energy would be devoted to following in the footsteps of his distinguished predecessors. He thanked them also because they had honoured the speciality which he practised, while admitting that this added materially to the difficulty of his task in addressing them. He felt indeed that it would not be fair to bore them with any remarks on the interesting but difficult subject of insanity; he preferred to base what he had to say upon the general experience of the first fourteen years of his medical life, much of which had been spent under the immediate guidance of his father, a general practitioner of the old school.

"The old are ever learning much from the new; may not the new learn something from the old?" Those who were imbued with the pessimism of Max Nordau might shrug their shoulders at this text and scoff at the idea that the rigid joints of the men of a generation back could be trained to move along the new path and that their central nervous systems were capable of adapting themselves to recent additions to knowledge. But the seniors might equally well retort that a generation of young men was growing up which was too wholly absorbed in the scientific side of medicine, too much engrossed in its artificial aids to condescend to learn from those who had received their training in the great school of practical experience. These young men should learn to reason out the evolution of medical science and not to despise any brick which contributed to the formation of the great wall of knowledge on which they stood. At the end of a century of unparalleled progress in the healing art it were well to remember the warning given by Sir Thomas Watson against making too much of the principles of medicine to the detriment of its practice. This warning was even more needed nowadays, and it was well to bear in mind the recent weighty complaint of Mr. Christopher Heath that students were getting

* The Presidential Address delivered at the annual meeting of the Bath and Bristol Branch

too much into the hands of professors who were anatomists but not surgeons, to the lasting detriment of their practical training. The old system may have tended to make the student too much a disciple of empiricism, but the scientific book-reading medico of to-day would benefit much by a little smattering of rational empiricism, the education of common-sense reading.

Dr. Weatherly had realised in his own case the value of apprenticeship to a sound practitioner, and how it afforded the young student the means of watching the progress of his patients, the relative significance of their symptoms, and the value of treatment. The older practitioner, observing the progressively greater precision of the implements of science as applied to the diagnosis of disease, was often forced to wonder how without their aid he had managed to find out what was the matter with his patients, or to pull them successfully through many grievous ailments. And yet while envying his younger brethren their scientific attainments, while listening to their learned papers and accounts of difficult diagnoses successfully achieved, he was sometimes bound to feel that it would have been well for them to have encountered some of the difficulties which fell to his lot before science had so asserted her sway. What was particularly lacking now was the training of the eye to detect minute, yet tangible and significant, differences in form, appearance, expression, and functional activity. The love of scientific detail might tend to the greatest accuracy in the diagnosis of a patient's physical signs, while the general condition of the patient failed to receive adequate notice and attention. As Erichsen once said, the educated student of to-day was thus making himself actually less useful to the sick man than his less perfectly trained predecessor, who by reason of his more general observation was often a superior antagonist to disease.

Another recent development which Dr. Weatherly viewed with some misgiving was the enterprise of the modern druggist. This remarkably active person had now a way of making up drugs into tabloids, neatly wrapped up with the dose to be given and the diseases to be cured writ large; he was sending out pamphlets broadcast, with descriptions of complaints which could be cured by this or that new drug with some grand-sounding Latin or Greek name, and the medical practitioner was in constant receipt of useful diaries with long lists of therapeutic agents manufactured by one advertising firm or another. The consequent tendency to pocket prescribing might in some cases be useful, but surely it tended too much towards putting patients into the hands of the advertising chemist, while it was at the same time getting the doctor out of the art of prescribing, which could be learnt only by practical experience. It was to be feared also that some of the new and fashionable drugs were ousting the older and simpler remedies which in the hands of the last generation of practitioners were found so useful and effective; of these, Dr. Weatherly thought that calomel in particular had fallen into undeserved neglect.

With regard to surgery the progress made since the invention of anaesthetics and antiseptics was truly remarkable and calculated to astonish the surgeon of sixty years ago. So great had it been that anatomically there was now nothing impossible to the surgeon, and he was only stopped by physiological considerations. But it was to be feared that as a consequence he tended to be too long in the performance of operations, to give too much attention to elaboration and detail, and too little to the danger of shock; he might even learn something from the celerity and dexterity of his predecessors. Again, there was undoubtedly too great a tendency to use the knife on all occasions as a means of diagnosis. Of course, this was much easier than any other method of examination, but would it not in many cases be better that the surgeon should give his powers of observation a chance, and at the same time learn by the conservatism of his older brethren? Then, again, in gynaecological practice it was true that the use of pessaries had at one time been carried to great excess, but there was now the danger that the pendulum had swung too far in the opposite direction, and that the knife and needle were a little too much in evidence. Similarly the knowledge that injuries could be so rapidly repaired led to excessive zeal in the use of the long forceps, so that with the announcement of the safe arrival of a healthy first-born there was too often the accompaniment of rupture of the mother's perineum.

THE PHARMACOLOGICAL ACTION OF THE THYROID GLAND.

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THE recent promotion of the thyroid to an official position in the *British Pharmacopœia* makes this a suitable time to state what is known as to its pharmacological action. More especially is this the case owing to the fact that the literature relating to the thyroid has recently swelled to such enormous proportions that he who runs is certainly no longer able to read it, whilst embedded in that literature there are yet a number of facts and observations which have a very direct bearing on the therapeutic use of the substance. It may, therefore, be permitted to one who, from the special nature of his own investigations, has been obliged to read all that has been written on the subject, to discuss briefly the present state of our knowledge as to the physiological effects of the administration of the thyroid, and the bearing of that knowledge upon its use as a medicinal agent.

I.—EFFECTS UPON METABOLISM.

Shortly after the thyroid began to be used in the treatment of myxœdema, it was noticed that the urine of patients who were taking it contained a large excess of urea (^{1 2}). More exact investigations were soon set on foot (^{3 17}) which showed that not only was the elimination of nitrogen increased in patients who were taking thyroid, but that the amount eliminated very often exceeded considerably the amount ingested in the corresponding period of time. Obviously, therefore, a tissue rich in nitrogen, presumably muscle, had undergone an increased destruction. The loss of weight in such patients was, however, much greater than any mere destruction of proteid tissue would account for, and attention was next directed to the intake and output of respiratory gases (^{18 22}). The results showed that under thyroid administration there is a great rise in the amount of oxygen taken in, and a very considerable, but relatively not so great, increase in the amount of CO₂ given out. The obvious inference was that the thyroid leads to a greatly increased consumption of the body fat.

Briefly, then, it may be said that the effect of the administration of the thyroid is to increase oxidation in the body; it makes the tissues, as it were, more inflammable, so that they burn away more rapidly. The products of the disintegration of the nitrogenous tissues appear in the urine almost entirely in the form of urea, uric acid, (^{7 12 13 22}) and the xanthin bases (⁷) being neither regularly nor appreciably increased, while the products of the fat destruction are eliminated as carbonic acid by the lungs, and water by the kidneys. It is important to note the large increase in the excretion of water which occurs under thyroid administration. Diuresis is often one of the first effects of the drug, and a considerable proportion of the very sudden fall of weight which is often to be observed at the outset of a course of thyroid treatment is to be attributed simply to loss of water. Thyroid feeding seems to make the tissues drier. On cessation of the treatment this loss of water is very quickly replaced, and is accompanied by a corresponding increase in weight.

It is not sufficient merely to know that the thyroid increases tissue metabolism; we must inquire more minutely into the details of its action. Under normal conditions, as is well known, there is a constant destruction of proteids, carbohydrates, and fats going on in the body. If the amount of proteids in the food be increased, there may be a temporary storage of nitrogen in the body, but very soon equilibrium is again established, and the output becomes equal to the intake. If we increase the amount of carbohydrates and fat in the diet we may succeed in storing some of the excess as fat, but we find also that we have diminished the amount of proteid broken down in the body. In the words of the physiologists, carbohydrates and fats have a proteid-sparing action. Now it is important to inquire, What effect has the thyroid upon all this? Does it merely hurry on the whole process so that the turnover in the body is as it were increased without any disturbance in the relative destruction of proteid and fat occurring, or does it increase one of these more than the other? In other words, Does thyroid feeding lead to a