irritation of the cut surface and less chance of absorption of carbolic acid into the system. It cannot be a good thing either for the patient or for the wound to be constantly deluging it with strong carbolic lotion.

The whole principles of wound treatment may be summed up in the one word—REST. This has been urged by many writers, from Magatus downwards, and indeed before the time of Magatus; but it is only within the last few years that science has so far advanced as to enable us to grasp the whole significance of that term as applied to the treatment of wounds. The causes of UNREST may be mechanical or chemical.[1] The *mechanical causes* consist of movement of the parts, of the presence of foreign bodies, of tension in the wound, and so on; and they are, as a rule, easily avoided by the use of suitable apparatus, by the removal of mechanical irritants, or by providing against the occurrence of tension; and inasmuch as they are easily avoided they are comparatively unimportant. The most important and the least easily prevented are the *chemical causes* of Unrest, and these may be divided into two great classes: 1. Where the chemical substance is merely something—a salt, or an acid, or an alkali—added to the wound from without, such as carbolic acid. Such a chemical cause will act only in proportion to the amount added, to its irritating property, and to the length of time that it remains in contact with the surface of the wound. When the original quantity is exhausted the

[1] Mr. Lister long ago divided the causes of suppuration into three great groups: 1. Putrefactive suppuration where it was due to the presence of putrid materials; 2. Antiseptic suppuration where it was due to the presence of some chemical substance, such as the antiseptic employed in the treatment of the wound; 3. Suppuration the result of nervous disturbance, as in tension. This classification still, I think, holds good, notwithstanding the recent work of Dr. Ogston referred to at pp. 248, 253, who has expressed the opinion that all acute abscesses are due to micro-organisms. The observations which I have published at p. 251, and others which I brought forward at the recent meeting of the International Medical Congress, seem to me to go against this view. At the Congress Mr. Lister also pointed out a number of clinical facts which proved that other causes of acute inflammation and suppuration exist besides the action of micro-organisms. I do not, of course, deny that micro-organisms are the cause of many of the acute abscesses in which they are found, but I think that in some they are accidental, and that suppuration may be induced otherwise than by their action.

chemical irritation ceases. 2. The other cause of chemical Unrest is where the chemical substance is being constantly formed in the wound. Here we have much the most formidable cause to deal with, for there is no exhaustion of the substance, but, on the contrary, continued formation of fresh material so long as the causes of this formation are present in the wound; and, as we have seen, the eradication of these causes, once they have entered, is a very difficult matter, and thus these causes of Unrest are the most important. To interfere with these causes of Unrest is the main object of antiseptic surgery. The prevention of their entrance is the special aim of aseptic treatment. The prevention of the entrance of micro-organisms is, as we have already seen, apparently much more easily and better accomplished than their destruction after they have entered. And further, in attempting their destruction after their admission, the wound is subjected in a marked degree to chemical Unrest of the first class. The ideal wound is a subcutaneous one, kept at perfect rest. We have not yet attained this ideal, for even with the aseptic method there is a certain amount of Unrest caused by the antiseptic employed, by the stitches, by the apparatus for drainage, and by the dressing itself. Nevertheless, the essential elements of Unrest have been abolished by this method, and the disturbances from the antiseptic, from the stitches, and so forth, have been reduced to a minimum, and now hardly make themselves evident. That art will still further perfect the treatment of wounds there can be no doubt; but whatever development occurs in the future, the great principles of Listerism, the exclusion of the chief causes of chemical Unrest, and the reduction of the action of the other causes to a minimum, must form the groundwork of any system.

In conclusion, I cannot too strongly express my conviction that the *scientific* basis of wound treatment should hold the most prominent place, and that it is only by a thorough knowledge of natural phenomena in all their bearings that the best practice can be carried out and the best results obtained. Loose observations and loose and vague ideas as to probabilities which have no foundation on the facts of nature, cannot advance art in any way. Natural phenomena are generally found to differ from the conception which man in his ignorance

is apt to form of them; and therefore any statements on any subject, to be of value in the development of that subject, must be founded on knowledge and rigid application of the facts of nature, whether or no these facts seemed at first sight probable or sufficient explanation of the phenomena. That advance can only be blind and imperfect till the true law of nature is discovered is well illustrated by the history of wound treatment in former years. Through the darkness which then reigned glimmers of light had at times penetrated, but no true and lasting progress was made till quite recently, when, chiefly by the scientific labours of two men—Pasteur and Lister—a flood of light has been thrown on one of the most obscure subjects in nature, and the foundation of rational methods of treatment on rational and scientific principles has been followed by inestimable advantages to mankind.

EXPLANATION OF THE PLATES.

These specimens have been drawn by the aid of the Camera Lucida, and Zeis' water-immersion or oil-immersion lenses were those chiefly employed.

PLATE I.

PLATE II.