a quite different direction from the pangen hypothesis. Whether we shall succeed in finding it is another question.

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PICTURES IN THREE DIMENSIONS.

A CHICAGO publishing firm has put on the market a series of pictures in which a stereoscopic effect is produced by a device which seems not to have been used before in this country, but which is well known in Germany. Two photographs of an object are taken at distances apart equal to the distance between the eyes, and with objectives whose focal lengths are equal to the distance of distinct vision—that is, in the ordinary manner of making stereoscopic pictures. These two pictures are printed in two different colors, say red and green, so as to nearly but not quite overlap each other, and they are then looked at through spectacles composed of red and green glass. If the red picture is to the right and the green picture to the left, then the right eye looks through a green glass and sees in strong *black* the picture which is printed in red, but overlooks the faint green picture by the side of it; at the same time the left eye looks through a red glass and sees in sharp black outlines the picture which is printed in green, but not the faint red shadow at the side of it. In this way are produced the two halves of a stereoscopic impression, and a very good illusion of relief is obtained.

That the explanation above given is the correct one is proved by the fact that the images of near objects are plainly farther apart than those of distant ones; that if one looks attentively, with the glasses on, one can see the shadowy secondary pictures at the right and left of the principal one; that by putting on the spectacles wrong side up an inversion of the relief is obtained—near objects look far and far objects look near, so far as this is not interfered with by other elements of solid vision, as perspective, shadows, overlapping, etc., and that, by inverting the picture as well as the spectacles, the correct relief is again obtained; and, finally, by the fact that when one sees single an object in the foreground, one is evidently not fixating upon the plain of the paper, because the title of the picture, in plain black lettering below, is then perceived to be doubled.

The pictures of this issue are roughly made, and while the illusion is very strong it is not at all perfect; the distance between a child in the foreground and a building in the background will be, for instance, very distinct, but the child will be itself rather flat. With better workmanship, this method for securing vision in the third dimension ought to have an important future. The stereoscope has, for some reason, never lent itself to the purposes of art; this process, which has much less paraphernalia, and hence has its mechanicalness much less in evidence, may conceivably fill a more important rôle in this respect. However that may be, its usefulness for scientific purposes ought to be very great. There are countless intricate things which one desires extremely to represent in their solidity, and which it is unnecessarily hard for the reader to catch the bearing of when they can only be seen in the flat. Think for a moment how great would be the difficulties of the student of geometry if he had no more lifelike representations of his plane triangles than he has of his polyhedra and his parallelopipedons, and then imagine the pleasures that are in store for him if he has only to pick up his red and green spectacles to see the figures of solid geometry in all the reality which has hitherto existed for him only in the plane! And what rapid progress will be made in the imaginings of the stereo-chemist when he is given this ma-

terial aid to the construction of his right-handed and left-handed molecules! It is strange that more use has not been made of the ordinary stereoscope for purposes of scientific illustration; instead of having expensive models of the forms of higher mathematics, every purpose would be subserved if a set of stereoscopic views of them were provided. With this new and more simple device there is every reason to hope that representation in the solid, requiring merely that a person should take his red and green glasses out of his pocket, will become nearly as much a matter of course as plain, or rather plane, diagrams are now.

Another field for the application of this principle is in illustrations thrown on the screen for large audiences. There would be no difficulty whatever in projecting one picture of a stereoscopic pair through a red glass on to the screen, and the other through a green glass, and providing the onlookers with the corresponding spectacles; this, in fact, is the special form of the process which is already in use in other countries. For this form, as well as that on a card for individual use, stereoscopic pictures already made need only to be reproduced in the proper colors to answer the requirements of this new method.

As regards the painter of pictures in the artistic sense, it is perhaps prophetic that he has already furnished his paintings strong purple shadows; he has only to intensify the greens on the *other side* of his trunks of trees, and to provide the necessary green and purple glasses for his critics, in order to show them a picture of reality, such as he has before only dreamed of producing.

The process ought, therefore, to have an important future. The present publisher in the Redheffer Art Publishing Co., Baltimore Building, Chicago.

C. Ladd Franklin.

THE INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.

BOTANY.

It is manifestly quite impossible to-day to make a satisfactory schedule of the classification of botanical books and papers for use in libraries, since, to be satisfactory to the botanists, it should represent the present development of the science, while, on the other hand, such a representation would be far beyond the technical botanical knowledge of the librarians. It is the misfortune of Science that much of its administration must be entrusted to persons who have, at the best, only a general knowledge of the subject, and this very often representing an old phase of the science, long since abandoned in the laboratory and lecture-room. It is, perhaps, impossible to have it otherwise, at least for a long time to come; we cannot require librarians to know as much in regard to the progress of Science as the workers themselves. It is inevitable, therefore, that any scheme of the classification of botanical books which can be used by librarians must fall considerably short of representing the present condition of the science. On the other hand, as revisions of library schemes are made from time to time, it is desirable that the classification should be brought forward somewhat nearer the present condition of Science, as far, at least, as can be done with safety, since no library, by its inertia, should become, to a marked degree, the conservator of abandoned scientific views.

The International Catalogue Committee apparently have kept in mind something like the foregoing, and have wrought out a scheme which will no doubt be workable by librarians and those whose knowledge of Botany is general rather than specific. Probably few, if any, objections will be brought against it by the librarians and general students of plants, at least in so far as the general plan is concerned. We may,