

theoretical or technical form, for in both processes the knowledge of the expert are demanded; but its province is to lessen and, in some instances, dispense with the monotonous manual labour necessitated by the present system. There are large areas of point paper in elaborate designs to which the same weave effect has to be applied, and where some labour-saving device is much needed. Further, in the enlargement of the artist's sketch to scale there is much mechanical work that it ought to be possible to reduce. The photographic inventions of Szczepanik profess to accomplish these objects, and the designs submitted prove, the author said, that there are possibilities of success in certain styles of pattern. The essential purpose of Szczepanik's invention is to develop from the ordinary sketch and enlarge to a prescribed scale the technically-prepared design, marked with the thousands, or may be millions, of dots grouped in different orders and so fitted together as to impart precise definition to the several portions of the woven figure or design. The process is threefold, consisting (1) of the preparation of the ruled paper; (2) the development of the design from an ordinary photographic negative; and (3) the application of the weave units to the several parts of the figure. Primarily, the apparatus consists of an optical lantern with a suitable arrangement of lenses. One important factor is the "raster" or multiplying plate, containing some 435,600 perforations, through each of which the weave type passes, and is printed on the enlarged design. In addition, there are weave-plates for determining the details of the pattern, and small metal slides for producing particular sections in distinct forms of type, so that they may be as readily distinguished from each other as if sketched in various colours. The light from the lantern passes through the negative of the design, entering a pair of lenses between which is fixed the small metal plate of the proper shape for developing the marks on the sensitised paper. The process consists in dividing and subdividing the "scale" pattern into rectangular spaces, and of marking each with the correct weave type. When there is no negative in the lantern, this type is repeated as many times as there are holes in the perforated plate, showing the feasibility of marking every square photographically on any kind of weaver's paper. In the first place, the negative is made of the complete design, and all parts erased but the ground sections, allowing of these being printed with their supplementary weave elements. Negatives of every part of the pattern are similarly printed in succession until the entire design has been obtained. For the production of shaded work, selecting plates are employed. These secure an accurate graduation of tones perfectly in harmony with the photograph from which they are derived. Provision is made for the execution of patterns in compound as well as in single-structure fabrics. Certain textile designs may be produced photographically by the Szczepanik system, so that it is now a question for demonstration whether designs so produced are comparable in legibility and equal for all practical purposes—as forcible in detail, as vital in execution—as those prepared by the much slower hand method.

Mr. Barker, chief of the textile department of the Bradford Technical School, was the only speaker on this paper. He considered that Szczepanik's apparatus gave results which could be reached without many of his elaborate devices. The point to consider in these matters was whether the process would work more quickly and cheaply and more conveniently than other methods. His first impulse was to condemn the system, but since then Szczepanik had made improvements in it. It was not necessary that there should be so much repetition and enlargement of the original design. He had no doubt that the use of photography after the manner which formed the subject of Mr. Beaumont's paper would be largely developed in the future, and he was in a position to say that a system would presently be brought forward by which photography would assist in the work of designing. He was not at that time able or at liberty to give any of the details. The system was the work of a student in the Bradford Technical College. He thought that this invention would carry the matter further than the system of Szczepanik. His view was that processes should be simplified rather than elaborated. It was a common fault of inventors who originated processes for superseding handwork by mechanism to copy the hand action. Experience, however, generally led to simplification, and adaptations

PHOTOGRAPHY IN TEXTILE DESIGN.

A paper by Professor R. Beaumont, of the Yorkshire Technical College, entitled "The Application of Photography to Textile Design," was next read. The paper dealt chiefly with a process invented by an Austrian schoolmaster named Szczepanik, who had expended much ingenuity in his solution of these "weave" problems. Szczepanik's apparatus is not for the origination of designs either in the