to receive the image at a distance equal to two unities, or to 100 divisions. For an image half the size of the object we reverse the proportionate distances.

If we want to enlarge the object 100 times we place it on the division 1 of the scale, and the image will be at a distance equal to 100 times the unity.

All intermediate distances and proportions are calculated and fixed in the same manner.

Let us suppose that we have a portrait on a negative, which is twenty times smaller than the natural size, and we want to enlarge the image to its natural size. We have only to place the negative on the fifth division of the scale, and the sensitive surface for the image at a distance equal to twenty times the unity.

If we wish to enlarge the same negative only five times, we place it at once on the twentieth division of the scale, and the screen for the image exactly at a distance equal to five unities.

These few examples will be sufficient to show how all the calculations can be effected by means, firstly, of a scale marked with all its divisions fixed on the table containing the camera, and secondly, by means of a tape long enough to extend to twenty-five or thirty unities and marked all over its length with these unities and subdivisions.

The scale fixed in the camera contains opposite each of its one hundred divisions the number indicating the corresponding distance of the screen, and the tape upon which all the distances of the screen are marked indicates also the corresponding divisions of the scale fixed in the camera, so that if the the two measures have been once for all correctly constructed, it is no more necessary to examine on the screen if the image is in good focus. It must necessarily be so, and that will save an immense trouble and all possible errors.

I think that nothing is more interesting than to examine and study the law by which these scales of measures are regulated. We can see the curious progression of foci, which increases and diminishes exactly in the same proportion as the distance diminishes and increases. The two quantities, whatever they are, being multiplied one by the other, must have for product the unity forming the scale; and if that unity is divided in one hundred parts, the product must be equal to one hundred: so that, knowing any distance either of the image, or of the object, we have only to divide one hundred by the quantity known, and the quotient is the other. For example, if the distance of the image is found by the tape to be 17·67, we have only to divide 100 by 17·67, and we have 5·66 for the distance of the object.

NEW METHOD OF EMPLOYING WAXED PAPER WHEN TRAVELLING.

BY CAPT. CHAMPLOUIS.

WAXED paper, by its lightness and the convenience of its negatives, is one of the most convenient processes for travellers. In warm countries especially, the absence of collodion gives to this process a much greater value, as the chemicals its process requires are not decomposed by the highest atmospheric temperature. The traveller, however, experiences some inconvenience from the numerous washings the preparation of dry paper requires, as well as for development and fixing in hypo-sulphite of soda.

During an expedition into Syria, Captain Champlouis, seeking to obtain photographic views by the quickest and simplest process available, finally adopted the following, by means of which he always obtained satisfactory proofs in whatever circumstances he happened to be placed.

Preparation of the nitrate of silver bath.—The sheet of iodized wax-paper is immersed in a nitrate bath (aceto-nitrate of the strength of 8 per cent.), and immediately afterwards it is laid, still wet, upon a glass plate intended to be placed in the slide; the paper is carefully applied to the glass by means of a piece of sponge, which, by gentle pressure, expels the air-bubbles, which if allowed to remain between the paper and the glass, would cause the silver to be reduced. Then with the same sponge a sheet of bibulous paper is applied to the sensitized wax-paper, and upon this a sheet of waxed paper, or a piece of water-proof cloth, which serves to exercise a last pressure: these two sheets must be moistened with distilled water; they form a cushion upon which a second plate of glass, of the same dimensions as the first, is placed. The whole is placed in a slide, and the paper thus prepared will serve to take a view at any time, even within ten or twelve days, perhaps even longer, as there is no reason to believe that the sensitized paper will undergo any change, as it is out of contact with the air, and cannot become dry except after a considerable lapse of time.

Development with gallic acid.—After exposure the negative is submitted, the same, or the next day, to the action of gallic acid, previously immersing it in the nitrate bath to restore its humidity, if it has lost it. A glass plate is covered with a thin layer of a saturated solution of gallic acid, and the picture is developed very rapidly, under the influence of the silver solution with which it is moistened. This method is preferable to immersing the proof in the developing solution.

Temporary fixing.—When the negative is properly developed, it may be temporarily fixed, by once washing in common water, and then immersing it for five minutes in a solution of iodide of potassium, strength 8 per 100. A single washing in ordinary water afterwards will suffice, and the negative is then dried between blotting paper. The negatives thus treated require nothing more until the photographer returns to his operating room. Before printing positives from them, they are completely fixed in hyposulphite of soda.

Advantage of this process.—This method of operating offers: 1. Economy of time; 2. Economy of water. Economy of time in the preparation of the paper; as it does not require to be washed or dried before exposure, nor fixed as by the ordinary methods. Economy of water, as there is no water for washing required, but only the silver bath and a bottle of distilled water to moisten the cushions with, which is preserved after each operation; and one or two litres of distilled water, which is used in successive small quantities for thirty or sixty negatives.

The slight washing of the negative, between the gallic acid and the iodide of potassium, being only to maintain the purity of the iodide, requires very little water. The iodide bath lasts a very long time, and seldom requires to be renewed, and is only diminished by evaporation and the operations to which it contributes.

An experience of five months travelling in the method above described has given the most satisfactory results.

ACARI IN THE NITRATE BATH.

DR. MADDOCKS communicates to our contemporary the *British Journal* a most singular discovery in connection with his nitrate bath, in which he has found some *acari*, apparently generated and living there. We append an extract from his communication:—

In the early part of December a twenty-ounce nitrate of silver bath, forty grains to the ounce, which had been in use during 1861, and placed for a month previous in a stoppered bottle, was returned to the bath, and set aside in a cupboard partitioned off in my working-room, so as to convert it into a dark chamber. It remained unopened until the 12th of April. The bath is of cemented glass, covered outside with asphalte varnish, and kept in a vertical wooden case with the cover shutting down to half the depth of the bath. When the solution was returned to the bath, half a sheet of white foolscap paper was first folded down on the top, and then the cover placed over it. The bottle was a perfectly clean one kept to receive the nitrate bath when filtered, or when the sides of the bath were to be cleaned. The bath, after cleaning, was always washed out finally with boiled and filtered or simply filtered