department, the necessity of having maps mounted with small expenditure resulted in the development of the following technique.

The method of map mounting described here is mainly the result of the writer's personal experience, suggestions offered by Mr. Hawthorne Daniel, of the American Museum of Natural History, and general references.[1]

The size of the mounting surface should be determined by the unit size of the map or number of maps to be mounted. The one used by the writer is sixty-six inches wide, one hundred and forty-four inches long and two inches thick. This width takes the full two-yard-wide bleached sheeting and the length accommodates a large number of small maps at one mounting. The thickness is such that it prevents warping from wetting.

The first essential of good mounting is a smooth, flat, fine-grained surface, on which the cloth may be securely stretched. The writer has found that a mounting board of white pine with a sanded surface is very satisfactory. The board is backed by three oak battens (2″ x 4″) which also prevent it from warping. Nails (2″ finishing nails) are toenailed every six inches along the sides with the points slightly projecting underneath, on which the cloth is caught as stretched.

Second, bleached muslin is necessary for permanent and high-grade mounting because of the increased adhesive qualities over unbleached cloth. All the maps at Syracuse are mounted on either Ranger or Pequoit quality sheeting at an approximate cost of twenty-five cents per yard in fifty-yard bolts seventy-two inches wide.

Third, a good quality of flour paste is essential. The boiled paste is better than cold-water paste. Steko Paste, made by the Steko Paste Company, of Rochester, N. Y., has been used and found satisfactory. This comes as a dry flour in two-pound bags.

Fourth, as the paper of the maps varies greatly, only experience will determine the proper dampness to mount maps. Matching of two parts of one map or of two maps is done before dampening to check the match and to insure soaking according to the amount of stretching necessary to match the smallest of the sheets. Both sides of the map sheet are sponged off so that the paper is soft but not coated with a film of water and so that all the wrinkles have been removed.

[1] "Notes on the Cataloging, Care and Classification of Maps and Atlases," by Philip Lee Philips, F.R.G.S., Library of Congress, Government Printing Office, 1921. "Directions for Mounting Maps," U. S. Geological Survey.

Fifth, large rubber window squeegees (12″ and 16″) are used, one for spreading the paste and one for smoothing the map and wiping off the excess paste. The greater the pressure applied the more closely will the map adhere to the cloth. All air bubbles must be removed, that the maps may lie perfectly flat with no wrinkles. There is little need to try to keep paste off the surface of the map, in fact, a little aids in working the softened paper. The excess need only be squeegeed off. After drying the slight coating of paste will be unnoticed.

Maps must be completely dry before being removed from the board in order that they may remain permanently flat. To insure proper drying, the room in which the maps are mounted should be a fairly dry one and remain so at all times of the year.

The finishing of the maps is determined by their ultimate use. Maps mounted for desk or field work are trimmed or folded. Maps for wall use require trimming and then half-round molding (usually one half inch) is used. Two pieces to form a full round with small ⅝″ No. 4 flat head wood screws holding them together aid in handling and hanging the larger maps. These rounds are sometimes fastened with glue in addition to the screws. Best effects are produced by staining the molding. Screw eyes, with wire for hanging and other finishing touches, may be added to suit the needs of the users.

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A CONVENIENT COLOR CHART FOR GENETICISTS

FOR the past year I have been using a color chart which has proven to be well adapted for genetic work. It does not give a precise and permanent record of every shade of color, as do Ridgway and other charts of that nature. It is, however, cheap and convenient and is roughly quantitative. The chart measures 12 inches in diameter and is approximately circular. There are eighteen colors arranged radially like the spokes of the wheel, blue, violet-blue, blue-violet, violet, red-violet, violet-red, red, etc., through oranges, yellows and green back to the blues again. Each color is divided into seven shades, grading from black at the center to a pale tint at the periphery. It is a matter of only a moment when scoring a plant, to move the petal back and forth until an approximate match is reached. The chart is not well adapted to scoring the peculiar colors met with in certain Nicotiana hybrids, where varying shades of yellow and green are overlaid by pinks, reds and violets. I have, however, used it successfully on Tradescantias, Aquilegias and Irises. While it would probably fade, if

constantly exposed to strong light, my copy, which I have mounted on strong cardboard and keep folded when not in use, has not changed perceptibly in nearly a year. The chart is known as the "Fischer Color Chart" and may be obtained from the Secretary of the New England Gladiolus Society, Mr. C. W. Brown, 13 Park Road, Ashland, Massachusetts.

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SPECIAL ARTICLES

A GROUP OF CHEMICALS ACTIVE IN INCREASING TISSUE PERMEABILITY AND ENHANCING CERTAIN INFECTIOUS PROCESSES

ATTEMPTS have been made to isolate and identify the factor demonstrated in testicle and certain other normal tissues, which has the property of increasing tissue permeability and enhancing the lesions resulting from infectious agents. Recently it has been shown (Goodner, Duran-Reynals) that certain invasive micro-organisms possess an extractable substance with similar properties.

In the course of this study, many chemicals and various tissue components as widely related as histamine, tyrosine or nucleic acid have been repeatedly tested in different ways with the hope of tracing the specific properties to some known physiological agents. However, the substances so far investigated have failed to show any power in increasing tissue permeability or augmenting infectious lesions.[1]

When working on the fractionation of testicle extract and the isolation of the soluble factor from staphylococcus, it was found that the activity in solutions would always correspond to a strong diazo reaction, while inactive fractions discarded during the purification would regularly give negative chemical tests. This observation indirectly led to the trial of pure diazo-compounds on dermal permeability. These proved to possess the property of reproducing the effect so far obtained only with extracts from certain tissues and virulent bacteria. The present paper deals with the activity of the diazide of sulfanilic acid under various conditions.

The p-sulfanilic acid itself from which the reagent is prepared is entirely inert, and the response is never different from that of the control. On the other hand, when a certain quantity of the diazonium derivative, namely p-diazo-benzol-sulfonic acid, is dissolved in water by means of sodium hydroxide and intradermal injections are made with India ink as indicator, this is followed by sudden and complete diffusion of the material injected. However, contrasting with the speed with which diffusion takes place, one observes a limitation as regards the area involved, and the surface of diffusion can not be appreciably increased even by the use of much more concentrated solutions.

The explanation of this fact was that we were dealing with a substance rather soluble in water which would first spread rapidly through the tissue spaces but would soon be taken up by the larger lymphatic vessels and carried away into the circulation. Consequently, it was thought that more favorable conditions for the production of the phenomenon could be obtained if the active reagent were linked to a larger molecule. Coupling of the diazide with gelatin, casein, egg albumin and horse serum was attempted. The preparations obtained from gelatin and casein were not very satisfactory. On the other hand, the diazo compound reacts readily with egg albumin and serum. These proteins can absorb large amounts of the reagent if adequate alkaline reaction is provided, and they yielded very active preparations.

The intradermal injection in rabbits of 0.5 cc of such azo-proteins with 0.25 cc of India ink suspension as indicator results in a gradual spreading of the material and the diffusion may continue to progress during several hours. The ink particles are almost completely carried away from the site of inoculation and in certain instances preparations can be made so that the diffusion area easily covers more than 120 sq. cm of the skin. The ink diluted with Ringer's solution and injected intradermally in the same amount remains for some time in a distinct bleb and its eventual diffusion is limited to a small area immediately around the site of injection and rarely greater than 4 sq. cm.

Moreover, the diazo-compound so combined with albumin or serum also possesses the property of enhancing infectious processes. Tested with progressive dilutions of vaccine virus it not only has the power markedly to increase the size of the local lesions (45 sq. cm as against 6.0 sq. cm for the control in a typical experiment), but exhibits a definite enhancing effect. In the higher dilutions, while the control injections remained completely negative, the same material with the azo-protein was able to develop typical and well-defined lesions.

[1] McClean has reported that certain protamines possessed the property of increasing dermal permeability, but inhibited infectious agents through their antiseptic power. However, these protamines were extracted from fish sperm and, in a recent private communication, McClean stated that by means of fractionations carried out with Morgan, he was able to refer their action on tissue permeability to the testicle factor itself contaminating the sperm proteins.