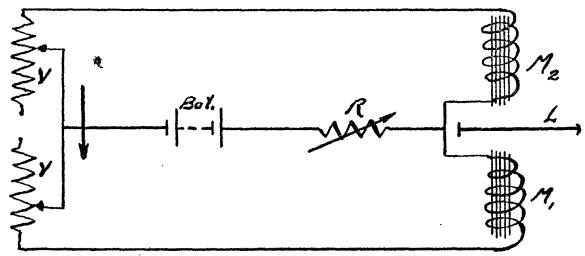

FIG. 1. V., V., balanced, variable resistances; Bat., battery; R., limiting, control resistance; M_1., M_2., electromagnets; L., soft iron lever.

lever, however, is a function of the balanced variable resistances in the outer electromagnet circuit. When used, for example, in making thoracic breathing records, the variable resistances are secured on a light frame and activated by a simple cog device, the resistance in this case being varied by a wire passing over the pulley-mounts of a modification of Hall's spirograph belt, and by an opposition spring. If in the diagram the arrow indicates the direction of the movement of the resistance contacts away from the indicated balanced or zero position upon inspiration, the electromagnet (M_1) will be energized, attracting the lever and resulting in a downward record on the kymograph. With expiration the resistance of the circuit will be changed, and the lever arm will pass through the base line (zero) position and upward under the influence of (M_2). The resistance of the equal variable resistances, the resistance of the delimiting control (R), the size of the electromagnets and the voltage applied to the circuit will depend on the specific uses of the equipment and the distance at which it is desired to operate the electromagnetic tambour.

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BRAZILIN STAIN ON SMEAR PREPARATIONS OF OENOTHERA POLLEN MOTHER CELLS

FOR the study of chromosomes in Oenothera pollen mother cells it has been the experience of many that the aceto-carmine method of smear preparations does not yield satisfactory results. Recently, however, Belling in his paper[1] and lately in his book[2] has recommended the use of a rather uncommon stain, brazilin, in connection with smear preparations for the study of chromosomes in pollen mother cells. The writer, after having tried and abandoned the aceto-carmine method, resorted to this recent method of Belling. This was used on the pollen mother cells of different species and mutants of Oenothera, and the results thus obtained in picturing chromomeres, chromosome rings and other configurations were of such an order of excellence that the description of the technique becomes advisable. The following procedure, based mostly on Belling's original method, was found most useful with Oenothera pollen mother cells.

The Oenothera buds are collected in the field and may be put in a vial containing water to keep them fresh. In the laboratory the segments of anthers are clipped off and arranged side by side on a microscope slide. To assure getting mitotic figures it is advisable to place on the slide anthers from buds of different sizes. A second slide held crosswise is then squeezed circularly with force enough to firmly extrude the pollen mother cells. The placing of anther segments on the slide and the squeezing should last not more than one minute. The two slides are then immediately inverted over parallel supports placed in a dish containing the fixing fluid. This fluid is a mixture of equal parts of two solutions which Belling designated as Solution A (chromic acid crystals 5 g, glacial acetic acid 50 cc, distilled water 320 cc) and Solution B (formalin 200 cc, distilled water 175 cc, or especially for metaphase preparations formalin 100 cc, distilled water 275 cc). The two solutions are mixed only when ready for use. Oenothera anthers seem to be sufficiently fixed in from 2 to 6 hours, but 3 to 4 hours' fixation has been found to give excellent preparations. The slides are then transferred to a dish containing 4 parts of water and one part of solution A. Here they are placed right side up and the thick fragments and anther walls may be removed. They are left in this dish from 10 to 15 minutes in order to remove the formalin of the fixative. The slides are then run through 15 per cent., 30 per cent. and 50 per cent. alcohols (3 to 5 minutes each) up to 70 per cent. where they are left overnight. From 70 per cent. alcohol they are put in a mordant solution (1 per cent. solution of ferric ammonia alum in 70 per cent. alcohol). The mordant solution is always prepared fresh. They remain in the mordant at least overnight. From the mordant, the slides are washed from 30 minutes to one hour in 70 per cent. alcohol. After being washed, they are then put in one half per cent. of brazilin stain in 70 per cent. alcohol. (Brazilin stain solution was found ripe a week after it had been prepared.) The ripe brazilin solution sufficiently stained the slides within 2 to 6 hours. They are then washed briefly in 70 per cent. alcohol and differentiated in 1 per cent. iron alum ammonia in

[1] J. Belling, "A Method for the Study of Chromosomes in Pollen Mother Cells," *University of California Publications in Botany*, 14 (No. 9): 293–299, 1928.

[2] J. Belling, "The Use of the Microscope," 315 pp., McGraw-Hill Book Company, 1930.

70 per cent. alcohol. When examined under the microscope, smears rightly stained with brazilin show the chromosomes brownish-black or black, the cytoplasm pink or straw colored and the cell wall colorless. The small chromosomes of Oenothera at the prophase, in rings or chains, are distinctly clear. Threads in synizesis stages can be easily observed. After correct differentiation which may last from 5 to 10 minutes, the slides are washed in 70 per cent. alcohol and 95 per cent. alcohol (5 to 10 minutes each). They are then passed (2 to 5 minutes each) through (*a*) absolute alcohol, (*b*) mixture of equal volumes of absolute alcohol and cedar oil, (*c*) mixture of equal volumes of xylol and thin cedar oil, (*d*) mixture of 9 parts xylol and one part cedar oil and finally (*e*) absolute xylol. The preparations are mounted in Canada balsam. Critically sharp and clear figures are shown by the preparations when viewed in the microscope with oil immersion objective, and the use of Wratten filters may even be dispensed with.

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JOINT MEETING OF THE EXECUTIVE COMMITTEE OF THE AMERICAN ASSOCIATION AND THE EXECUTIVE COMMITTEE OF THE PACIFIC DIVISION

THE executive committee of the American Association met in joint session with the executive committee of the Pacific Division at the Faculty Club of the University of California, Berkeley, on Wednesday, September 17. The following members were present: Cattell, Curtiss, Millikan and Morgan, of the national executive committee, and Barnett, Benfield, Clausen, Loeb, Martin, Moore, Smith, Vaughan and Luck, of the Pacific Division. Morning and afternoon sessions were held. The following items of business were transacted:

1. The minutes of the meeting of April 27 were ordered approved as circulated.

2. A report of the permanent secretary under date of September 1, 1930, was presented. The financial condition of the association was shown to be satisfactory, although the need of caution in embarking upon new expenditures of any considerable magnitude was indicated. Receipts have increased with growth in membership, but expenditures have grown steadily as the activities of the association have expanded. It is becoming increasingly desirable that local guarantees for the support of the meetings be large enough to cover the costs without drawing upon the current funds of the association. Plans have not been formulated for financing the newly inaugurated summer meetings. About $2,500 of the current funds for 1929–30 will be carried over into the new fiscal year. In addition, there are reserves of approximately $7,200 in the publication, meeting and emergency funds. The membership of the association now exceeds 19,000, an increase of 600 in the past year, and of 7,500 during the decade, 1920–1930. About 50,000 letters will be sent out in October to members of associated organizations inviting the recipients to membership in the American Association. Fifteen thousand others will be circularized before the Cleveland meeting. The new fellowship nomination plan has resulted in the nomination of several hundred candidates by the respective section committees. The total number of fellows now approximates 6,000.

3. The resignation of Dr. S. F. Trelease from the secretaryship of the council was announced. Dr. Trelease is also withdrawing as program editor, a position which he has ably filled for a number of years. A committee was appointed consisting of J. McK. Cattell, D. R. Curtiss and B. E. Livingston to nominate, for consideration by the council, successors to Dr. Trelease.

4. The chairman summarized an extensive report from Dr. Rodney True, secretary of the committee of one hundred on scientific research. The work of the committee in encouraging and promoting the adoption of adequate salary scales by universities has received commendation. The committee seeks authority to solicit from some suitable foundation an appropriation of $20,000 to further this phase of the work. It proposes that a representative be engaged to study the policies on salary, research, retirement provisions and teaching load, as practiced within a large number of American colleges and universities. The secretary of the committee of one hundred on scientific research was instructed to call a meeting of the committee at Cleveland to consider the work and organization of the special committees.

5. The relations between the social and natural sciences in the Pacific Coast region were considered. The special committee, appointed to inquire into these relationships, reported that steps should be taken in the organization of the Pasadena meeting to develop a special program for the social sciences. Specific