heights of 1,000 feet above drainage. The Central or Alleghany province is composed of linear ridges separated by valleys of varying width, trending northeast-southwest, with seven more or less definite parallel ridges in a distance of 14 miles rising to heights of 1,000 to 2,000 feet above drainage. The southeastern, or Great Valley province, is a broad valley consisting of a dissected peneplain which lies at an elevation of about 2,100 feet.

It sometimes happens in this region that the alignment of clouds with mountain ridges is so conspicuous that there can be little question but that the distribution of clouds is determined by the topography. This is likely to be conspicuous when there are continuous thin clouds covering the Cumberland plateau and moving to the southeastward. As the cloud mass moves over the Alleghany province there is a gradual alignment of clouds in the northeast-southwest direction paralleling the mountain ridges, separated by narrow cloudless areas, and the perfection of this arrangement increases with progress southeastward across the ridges. This parallelism is maintained for several miles over the Great Valley and gradually becomes less definite.

R. J. HOLDEN

TWIN SEEDLINGS IN ANGIOSPERMS

IN SCIENCE for May 16, 1930, one of the items of the Supplement page xiv has to do with the possibility of two plants being produced from a single seed. "Mrs. Tema Shults Clare, a teaching fellow at the University of Southern California, has obtained in two instances pairs of twin seedlings sprouting from Torrey pine seeds, and one pair of similar twins from the seed of a piñon pine." To this report is added the following statement: "This habit of twinning from single seeds is peculiar to the gymnosperms. The higher seed plants, the producers of showy flowers, apparently do not have this possibility."

In SCIENCE for August 23, 1929, R. H. Woodworth reported the production of two embryos from one seed of *Alnus rugosa,* a species of the Betulaceae which is a family of the Angiospermae. From a sowing of 150 seeds about 50 per cent. germinated and six of these produced twin seedlings. The pairs have developed quite normally into young plants. This phenomenon is considered at length in a paper entitled "Parthenogenesis and Polyembryony in *Alnus rugosa,*" which appeared in the *Botanical Gazette* for June, 1930.

It is also well known that the citrus fruits, particularly the grapefruit, produce seeds which frequently give rise to more than one seedling.

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MINERAL RESOURCES OF GREECE

ONE usually thinks of Greece as the home of decaying monuments to immortal thinkers and writers. Few of us realize that Greece is a wealthy country. The ancient Greeks did considerable mining of copper, silver and tin, but they did not begin to touch the wealth of other minerals which lay beneath the soil. The development of natural resources has remained inactive for ages.

The Germans were pioneers in extracting some of Greece's mineral wealth and are still active in some localities. The British have long been quarrying the valuable and extensive marble deposits, but on the whole a vast and virgin area remains to be worked.

The more abundant ores found in Greece are those of iron, lead, sulfur and magnesium. The yearly production of these ores averages 322,000 tons. Iron ore mined amounts to 88,000 tons containing 42–62 per cent. iron. Lead is mined to the extent of 76,000 tons. This ore is rich in silver. Magnesite occurs throughout Macedonia and contains 95 per cent. magnesium carbonate. Other ores extracted in lesser amounts are those of zinc, nickel, chromium, manganese, aluminum, copper and antimony. The total amount mined approaches 30,000 tons yearly.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

A PRACTICAL METHOD OF DETERMINING THE FALL IN POTENTIAL IN A MICRO-ELECTROPHORESIS CELL[1]

A PRACTICAL method of determining the fall in potential in a micro-electrophoresis cell is described, whereby it is possible to determine the fall in potential at any stage of an experiment without any loss of time.

[1] From the Laboratory of Hygiene, Department of Pensions and National Health, Ottawa, Canada.

The method is a so-called null method and in principle consists of balancing two unknown circuits using a precision voltmeter to register the voltage in one circuit necessary to balance the other, as indicated by a sensitive galvanometer. A certain definite assembly of apparatus was found to be most satisfactory. Fig. 1 indicates the apparatus used together with the connections, and is self-explanatory. The Central Scientific (Weston) galvanometer is placed in the circuit for preliminary balancing.

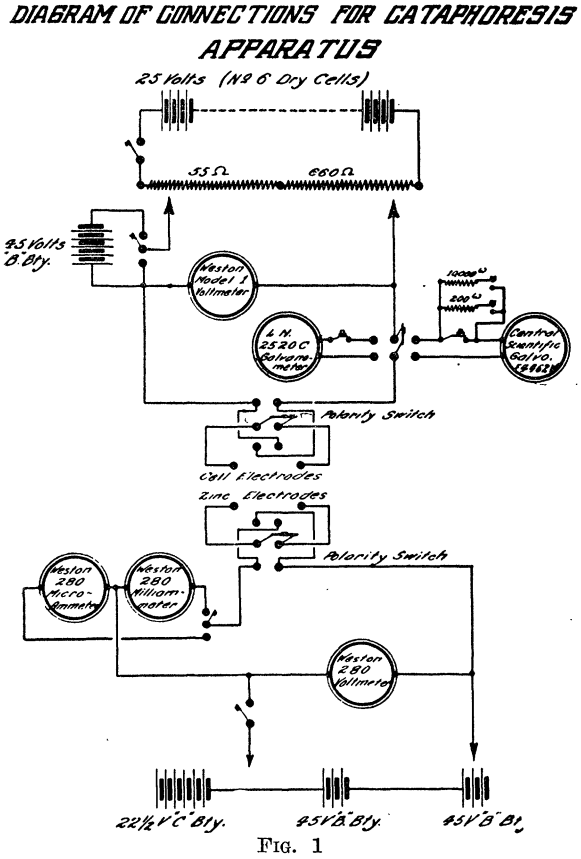

FIG. 1

Polarization may take place if any appreciable current is drawn from the cell electrodes. It is therefore advisable when balancing a circuit not to depress the key switches longer than is necessary to cause deflection of the galvanometer. After a little experience this difficulty is never encountered.

The method and apparatus herein described have been used for several months with a Northrup-Kunitz design of cataphoresis apparatus, and has proved to be of distinct value in controlling experimental work.

The author wishes to express his appreciation of the advice and assistance given by Captain R. A. H. Galbraith, of the Royal Canadian Corps of Signals.

JAS. GIBBARD

THE MEASUREMENT OF ARM GIRTH

FRANZEN has emphasized arm girth and calf girth in measures of growth and nutrition.[1] The instrument in common use for obtaining these measures is a tape wound about a coiled spring in a small metal case. To keep the tension more or less constant in measurements, a handle is provided with a spring to balance the spring of the case.

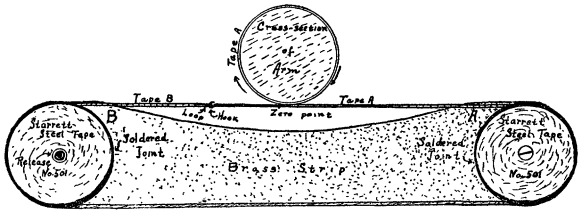

FIG. 1

The figure printed herewith is a drawing to illustrate a method of mounting two steel tapes so that the tension of one may be balanced by that of the other.[2] When one tape has been looped around the member to be measured, it is attached to the end of the other and both springs are released by the pressure of the thumb of one hand and a finger of the other. Tension is thus controlled automatically. The instrument, which may be called a girthometer, is entirely practicable, having been used for measuring thousands of arm girths under the direction of the writer.

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SPECIAL ARTICLES

THE LOGISTIC CURVE AND THE CENSUS COUNT OF 1930[1]

EARLY in 1920 we published[2] the results of fitting a logistic curve to the census counts of the population of the United States from 1790 to 1910, inclusive. At the time the computations were made in 1919 the results of the census of 1920 were not available, and therefore were not and could not be included in the calculations. Soon after the original paper was published the notation was improved, and the curve took the definitive form, still, however, *without* the use of the 1920 count,

$$y = \frac{197.27}{1 + 67.32\,e^{-0.0313x}} \qquad \text{(i)}$$

[1] From the Department of Biology and the Department of Biostatistics (Paper No. 153), of the School of Hygiene and Public Health of the Johns Hopkins University.

[2] Rearl, R., and L. J. Reed, "On the Rate of Growth of the Population of the United States since 1790 and Its Mathematical Representation," Proc. Nat. Acad. Sci., Vol. 6, pp. 275–288, 1920.

[1] R. Franzen, "Physical Measures of Growth and Nutrition," American Child Health Association, 1929.

[2] The writer was assisted in making the first of these instruments by Mr. Wm. Sachs. While no complete check of the literature has been made, nothing like it has been found in the references consulted. The instrument was devised for use in a study financed by the University of Texas Fund for Research in the Social Sciences.