The translation has been very carefully made. In fact, the degree of literality is, in many places, so great that good English usage is not found. This is, however, probably to some extent intentional on the part of the translator, for the sake of exactness in presenting the author's views. Mr. Skerl has done a valuable piece of work in presenting this translation to English-speaking investigators.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

REGELATION AND LOW TEMPERATURES

EVERY year we show the freshman class in physics that a loaded wire will cut through a block of ice leaving the block intact. Every year the students read the insufficient discussions in their text-books (there is one recent text that does explain fully), most of them not getting beyond "The pressure melts the ice." If pushed for a further analysis, they say that the energy to melt the ice comes from the descending weight, and they accordingly conclude that the cutting of the block would go on at any temperature.

After several years of arguing, finding the students uniformly unconvinced and even the instructors often doubtful, and never in the whole time having met an inquirer who had seen the experiment tried at low temperatures, I decided to bolster up "I can see, with my mind's eye" with "I have seen with my own eyes."

A rectangular block of ice, taken from the refrigerator and treated in the usual manner, was cut through by the loaded wire in forty minutes. The whole apparatus was then put out of doors for several hours and then the wire loaded as before. During the eighteen hours that the experiment was continued the temperature of the surrounding atmosphere varied from 0° Fahr. to −20° Fahr. In that time the only effect of the wire on the ice was a mechanical chipping out of a bit at each of the sharp upper corners of the block. Across the top of the block the wire touched only the highest points and even there produced no observable effect.

This experiment is reported as just one more instance where the time and energy required to make the convincing test is but a small fraction of the time and energy spent in fruitless office-chair debate about how nature ought to operate.

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SPECIAL ARTICLES

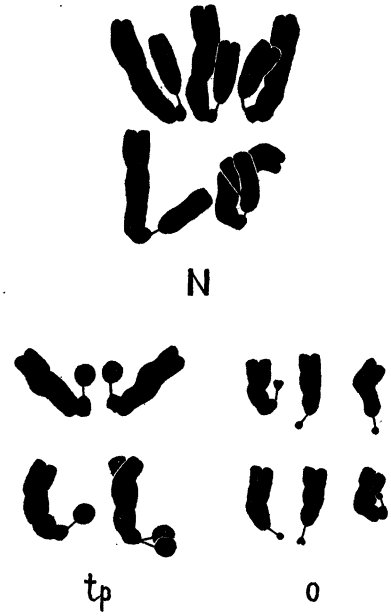
THE S-CHROMOSOMES IN ORNITHOGALUM L.

As my paper on the chromosomes of the Ornithogalum, which I wrote in 1923, is not yet printed, I should like to publish a preliminary note concerning the chromosomes possessing satellites,[1] which I call chromosomes S.

In 1915 D. J. Persidsky found in *O. umbellatum* L. satellites of a length hitherto unknown. This discovery was made in the laboratory of Professor S. G. Nawaschin and remains unpublished. When, in 1921, I began the investigation of other species of Ornithogalum, I found that in them there are also chromosomes with satellites—one pair of such chromosomes in each diploid nuclear plate of each species. The length of the satellites was, however, found to be very unequal in different species. The same can be stated also about the length of the "body" itself of the chromosomes S. Nevertheless, I take it for certain that the S-chromosomes of one species are homologous with the S-chromosomes of the others.

The S-chromosomes are easily distinguishable and therefore very convenient for comparative studies.

In Fig. 1 are represented the S-chromosomes of three species: *O. Narbonense* L. (N), *O. tempskyanum* Fr. et Sint. (tp) and *O. oligophyllum* Clarke (o).



The satellites of *O. umbellatum,* studied by D. J. Persidsky, are still longer than those of *O. Narbonense.*

The lengths of all the other chromosomes of Ornithogalum are also unequal in different species, and

[1] See Tischler, G., 1922. Allgemeine Pflanzenkaryologie, Berlin, Borntraeger, pp. 526 and 632.

the sum of the lengths of all the chromosomes of the set is smaller in the species with reduced inflorescences.

In my first paper[2] I formulated the proposition that the historical process of changes in chromosome-length is of common occurrence. Since that time I have been able to prove the existence of this process for the Muscari[3] and to establish it for the Bellevalia[3] and Ornithogalum.[4] However, I admit at present that the scheme of degradation of the chromosomes that I gave in my first paper[5] is not universal: we are obliged to acknowledge that the length of those chromosomes, which have no satellites, and never had them, has also changed.

All the data I have in my possession point out clearly that the chromosome-length changes as the species diverge, within very wide limits: the satellites in *O. Narbonense* are nine times longer (and three times broader) than in *O. oligophyllum!* The bodies of the S-chromosomes are in the first species twice as long as in the second.

The historical process of the change of the chromosome-length is one of those phylogenetic processes which must be established by the comparative study of chromosomes in different systematic groups.

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THE AMERICAN CHEMICAL SOCIETY

SECTION OF HISTORY OF CHEMISTRY

F. B. Dains, *chairman*
Lyman C. Newell, *secretary*

Chemistry in old Georgia: C. J. BROCKMAN. There was no Colonial chemistry in Georgia. From the time of its foundation as a colony in 1732 until the expulsion of the British in 1782 Georgia, as a colony, was dependent upon its sister colonies for its explosives and even its rum. The University of Georgia was founded in 1785, but was not active until about 1807 under the presidency of Josiah Meigs, a Yale graduate who introduced the study of "Chemistry, with actual experimental demonstration of its principles." Apparatus for the course in "Philosophical Investigations" to the extent of 205 pounds sterling was imported. Natural philosophy was divided in 1822 into separate parts, *i.e.*, physics and chemistry. Dr. Henry Jackson became professor of natural philosophy in 1811 and was given leave of absence to serve as secretary of the legation at Paris a few years later. A scientific library valued at several thousands of dollars was maintained. In 1854 a gift of $20,000.00 was made by Terrell to advance the knowledge of agriculture. This gift is unique in the history of the science. The course of lectures to be given was to include: (1) Agriculture as a science; (2) practice and improvements of different people; (3) chemistry and geology so far as they may be useful in agriculture; (4) manures; (5) analysis of soils; (6) domestic economy, particularly referring to the southern states. The aid of Dr. White, of the chemical department, in tracing some of this information is appreciated.

Chemistry and alchemistry in the Arabian nights: C. J. BROCKMAN. The Arabs were the people who preserved the Greek culture during the Dark Ages and then brought it into western Europe. From the advent of Mahomet to the Renaissance, Arabian culture was spread into Egypt, Morocco and Spain by the fanaticism which was peculiar to Islam. Most of this culture has been lost through religious and racial prejudices. Very slowly the records are being searched for information that will reveal the glories of the Arabic influence when at the height of the tide. The "Arabian Nights Entertainments" are probably the only extant authority on the Arabic "folk-lore" from Mahomet to the disintegration of his empire. These tales contain much that is fantastic and supernatural, but in the background there must be something of real historical value. The "Nights" contain many references and inferences concerning the use of chemical substances as cosmetics, drugs, foods, etc., and for the transmutation of metals. The Houris and the dancing girls colored their finger and toe nails with henna and blackened their eyelashes and eyelids with "kohl," from which word is derived our present term alcohol. The Bedouin understood the uses and applications of aphrodisiacals as a cure for impotence, one of the horrors of old age. The hypnotics, sedatives and narcotics as bhang, hashish, henbane and hemp found extensive use. Gum benzoin measured by volume was a criterion of female physical beauty. Leather, metals, synthetic drinks and foods, earthenware and glass vessels were manufactured in quantity. Beer and wines were used for the purpose of producing intoxication, not for social courtesy. An anti-intoxicant was found in myrtle which also served the dual purpose of a flavor for new brandy. Extensive directions are often given for the transmutation of lead and mercury into gold and silver. Extraordinary combinations of foods and drugs were prescribed as cures for leprosy and other dread diseases. The Arabian Nights in places could easily be called the popular chemistry of the Arabs. Though very voluminous and not by any means a treatise on the chemistry of the age, the Nights possess a fascination which makes them what is now called "interesting reading."

LYMAN C. NEWELL,
Secretary

[2] Delaunay, L., 1915. Étude comparée caryologiques de quelques espèces du genre Muscari. Comm. prélim. Mém. Soc. Natur. Kiew, vol. 25, pp. 33–64, pl. 1, fig. 1–2. (Russian with French résumé.)

[3] Delaunay, L., 1922. Vergleichende karyologische Untersuchungen einiger Muscari- und Bellevalia- Arten. Moniteur du Jardin Botan. de Tiflis, série 2, livr. 1, pp. 1–32, fig. 1–11. (Russian with very short German résumé.)

[4] The unpublished article.

[5] *L.c.*, p. 51, fig. 2. See also Tischler, G., 1922. Allg. Pflanzenkar., p. 632, fig. 375.