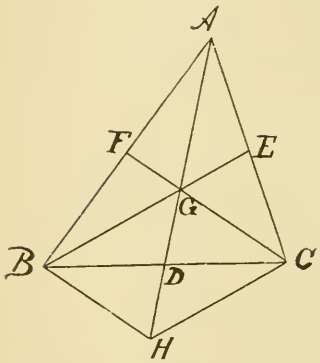
A Simple Proof That the Medians of a Triangle Concur

John C. Gregg.

Theorem.—The three medians of a triangle are concurrent.

Demonstration.



Let AD and BE be two of the medians; they will meet in some point G. Join CG and extend it to meet AB in F. Extend AD to H, making DH = DG, and join HB and HC.

Since BC and GH bisect each other, BGCH is a parallelogram. In the triangle ACH, since GE is drawn through E, the middle point of AC and parallel to HC, G is the middle of AH. And in the triangle ABH, since G is the middle of AH and GF is parallel to BH, F is the middle of AB and CGF is the third median, and the theorem is established.

On the Density and Surface Tension of Liquid Air.

C. T. Knipp.

[Abstract. Published in the Physical Review, February, 1902.]

The variation of the density of liquid air with time was determined. The liquid was contained in a given Dewar bulb. The sinker method was used, and it was assumed that the coefficient of expansicn holds at the temperature of liquid air. A curve was platted which indicates that .933 is the density of liquid air when first made.

In the determination of the surface tension two methods were employed—the capillary tube method and the maximum weight method. Owing to the distortion due to the bulb, also to the agitation of the liquid surface, the first was not considered reliable. The second method, however, worked very well. The variation of the surface tension with time of the liquid contained in the above bulb was determined. A curve was platted. From the curve the surface tension of liquid air when first made was found to be 9.4 dynes.

A Few Experiments with Liquid Air.

C. T. Knipp.

[Abstract.]

Three experiments were given, using the liquid as a refrigerant. (1) The resistance of manganin wire at the temperature of liquid air; (2) the absorption of heat by conduction into the liquid; (3) the action of a Cu-Fe thermostat when placed in the liquid.

(1) The temperature coefficient of manganin wire was found to agree fairly well with that found by Dewar. Cooling the wire to the temperature of liquid air caused it to undergo no permanent change.

(2) By connecting a block of copper through a copper rod to a bath of liquid air the temperature of the block of copper can be reduced to nearly that of the refrigerant. This principle enables any intermediate temperature to be maintained. By this method a connecting rod of copper about ½ sq. cm. in area and 20 cm. long froze a cu. cm. of mercury placed in the block of copper in 6¼ minutes.

(3) A Cu-Fe. thermostat was found to be very sensitive, and it was also noticed that the same coefficients hold at the temperature of liquid air.

The Bitangential of the Quintic.

U. S. Hanna.

Note on an Attempted Angle Trisection.

R. J. Aley.

The Zoölogical Survey of Minnesota.

Ulysses O. Cox.

With the establishment of the Geological and Natural History Survey in Minnesota provision was thereby made for collecting and describing the various faunal forms of the State. For a number of years after the survey was established work was done only along geological lines. In 1886 there appeared a list of the Aphidæ of Minnesota, by Mr. O. W. Oest-