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A METHOD OF MEASURING INSECTS.

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The common callipers ordinarily sold for measuring insects have always seemed to me too coarse for fine work. In the Hemiptera especially, where there is an abundance of small forms, they would certainly be useless for the delicate measurements of antennæ and limbs so frequently necessary, and for the proportional dimensions called for in the determination of species. While endeavouring to solve this problem, my

set of drawing instruments came to my mind, and with the bow-dividers (Fig. 12) the difficulty was partially solved. I ground the points flat and parallel, to knife-edges. Now, by means of the screw of the dividers



Fig. 12.

and by the use of a magnifier, it was possible to make direct measurements of parts of an insect, such as diameter and length of limbs and antennæ, dimensions of the segments, etc. The next problem was an accurate scale. In looking over the machine-tool catalogue of Brown & Sharpe, Providence, R. I., I ran across the cut of a little steel scale

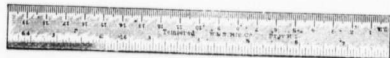


Fig. 13.

(Fig. 13) 5 cm. long, graduated on one side to centimeters, millimeters and 5ths of a millimeter; and on the

other to inches, halves, quarters, eighths, 64ths and 100th. With these two appliances I can make measurements to within one-tenth millimeter or less. As to the manner of using them, whoever has the instruments will at once see the way, without my entering into a prolix explanation. The cost of the scale is trivial (25 cents); the dividers are more expensive. I believe they cost something more than a dollar,