

of Naturalists which was held in Odessa in August 1883, and of which I am the only foreign survivor. I became acquainted with the most prominent professors of that University and found that they were first-rate men of science, without a trace of anything "backward and reactionary." And yet this reproach is correct, but it refers to the State director of the university. A man, unsympathetic, gloomy, reactionary, every inch a bureaucrat, and fairly old, inaugurated the first general meeting with the following severe words: "You came here to speak of science and I hope that you will speak *only* of science!" After this rose Metchnikoff and gave a brilliant account of his recent and unpublished work on phagocytosis, which was received with enthusiastic applause by the whole assembly.

I congratulated my Russian colleagues and the University upon having such a professor, but they replied with regret that he no longer belonged to the University, and upon asking for reasons I was given the explanation: Metchnikoff as a professor of zoology announced a course of lectures "On the Theory of Evolution." And now the very reverse took place of what I described four months ago (see above). The director summoned Metchnikoff to his office and said to him: "It appears that you are going to lecture on Darwinism? If it is so, then you must submit your written lectures to my censorship and I will tell you what I allow you to say to the students and what not!" Metchnikoff did not accept this explanation of the "Lehr- und Lernfreiheit," he did not submit his notes to the curator; he resigned the professorship. Russia was not the soil for such a genius, and it was good fortune for him and for science that he left for Paris and for Pasteur.

BOHUSLAV BRAUNER.

Bohemian University, Prague, March 9.

**The Accuracy of Tide-predicting Machines.**

UNDER the above title in NATURE of February 23, Dr. A. T. Doodson comments on my letter that appeared in the issue of NATURE for February 2 under the same title. Unfortunately, Dr. Doodson is dealing with a matter outside the scope of my letter, and his statement that he is not "convinced by the tests recorded by Mr. Marmar" in no way invalidates any of the statements in my letter.

As specifically stated in my letter, it was prompted by a desire to prevent the possible misconstruction, on the part of those not familiar with tide-predicting machines, of a statement to the effect that tide-predicting machines are subject to "serious errors in their results." Occasion was also taken to direct attention to the different types of tide predictors and to a table showing the differences between computed and predicted heights for one day in the case of Hong Kong.

With none of the statements relative to these matters does Dr. Doodson appear to be in disagreement. What he does question, however, is something outside the scope of my letter, namely, whether the tide predictor with the operation of which I am familiar is or is, not suitable for predicting hourly heights for research purposes within 0.05 ft. for a spring range of 30 ft. Not being concerned with that question at the time, there appeared no occasion for the tests, "exhaustive and convincing," that Dr. Doodson desires.

In his letter Dr. Doodson states that the tide predictors at his command were found unsuitable for use in the elimination from the observed tide of the tide due to a number of constituents. Nevertheless, this does not invalidate the general proposition that in such problems "the tide predictor should very materially lessen the laborious computations involved."

H. A. MARMER.

U.S. Coast and Geodetic Survey,  
Washington, D.C., March 18.

It seemed to me that Mr. Marmar's first letter left the impression that the U.S.A. machine is one that is free from serious errors of the order of magnitude of those of the British machines, and I raised the question of proof. I said that I should be very glad to know that this machine could produce hourly heights to within 0.05 ft. with a spring range of 30 ft. I questioned whether it would or would not give errors of 0.4 ft. in such a case. If my doubts are warranted, then the U.S.A. machine also is subject to serious errors, which, as I suggested, would prohibit its use for the research work mentioned above in Mr. Marmar's last paragraph.

A. T. DOODSON.

Tidal Institute, University of Liverpool,  
April 3, 1922.

**Pythagoras's Theorem as a Repeating Pattern.**

IT may not be generally known that the Theorem of Pythagoras, Euclid I. 47, is closely connected with the Theory of Repeating Patterns in space of two dimensions. The simplest proof by dissection of that Theorem establishes at once that any two squares placed in contact as in the accompanying diagrams (Fig. 1) constitute a figure such that a number of them can be assembled so as completely to fill flat space.

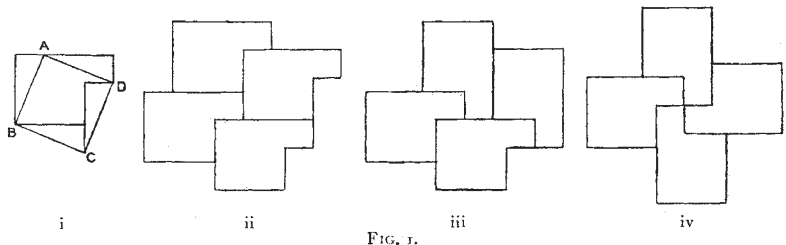


Fig. 1 (i.) shows the proof by dissection. Also the large square, regarded as a base, shows by the Principle of Transformation in the Theory of Repeating Patterns that the figure formed of the two squares is a repeating pattern. The transformation consists of cutting out the triangles the bases of which are BC and CD and erecting them upon the sides BA, AD. This nature of transformation yields an infinite number of repeating patterns of a particularly interesting kind, because of this category each member has the property that the assemblages can be carried out in three different ways, namely, so as to exhibit 1, 2, or 4 orientations or aspects of repeat respectively. In the present case of the Pythagorean Repeat the three ways of assembling are shown in Fig. 1 (ii., iii., and iv.).

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