MATHEMATICS

Congress Juggling Figures In Struggle With Seats Problem

Mathematicians on the Sideline Are Rooting for Method of Equal Proportions for Reapportioning

CONGRESS is engaged in a struggle to make democracy work on the best mathematical basis, and mathematicians on the sidelines are rooting for the method of equal proportions instead of the method of major fractions.

It is a matter of reapportioning the seats in the House of Representatives, always a sore subject because it may legislate some present representative out of his job or so warp his district that he has to start building his political fences in unfamiliar territory.

Because the number of seats in the House is fixed at 435 and the country continues to grow in population, new standards should be set with each census. It is now time to make the changes based on the 1940 census.

Determining just what states shall have how many representatives has been done by the method of major fractions in the past. This mathematical procedure has been vigorously attacked by mathematical authorities, led by Dr. E. V. Huntington, Harvard's professor of mechanics.

The 1941 apportionment bill, H.R. 2665, has passed the House and is about due to come up in the Senate, which is not directly concerned because the number of senators remains two for each state regardless of how the country grows. If this equal-proportions bill does not pass the Senate, however, the now outdated method of major fractions will be used in allotting the representatives.

"The retention of the method of major fractions in the 1941 apportionment would imply the complete abandonment of any attempt to equalize the congressional districts among the several states," in the opinion of Dr. Huntington.

If Congress desires to equalize both the congressional districts and the number of representatives per million inhabitants among the several states, the methods of equal proportions will always give a better result on a percentage basis.

But Congress faces a dilemma when it desires to measure the inequalities by absolute differences instead of by the more natural percentage differences. For minimizing the absolute differences between the numbers of representatives per million, the major fractions method is better. For minimizing the absolute differences between congressional districts, the equal proportions method is better.

The mathematicians say that the very plausible desire to make the congressional districts in each state differ as little as possible from a population of 301,164, the average congressional district for the country at large, just won't work because it leads to a mathematical paradox.

It is just as easy for the Bureau of the Census, which makes the computations, to figure the problem of what states will have the House seats by major fractions or equal proportions.

Here's a test computation under the two methods: Michigan has a 1940 population of 5,256,106, Arkansas has 1,949,387. Under the method of equal proportions, Michigan would have 17 representatives with 309,183 to a district and Arkansas would have 7 with 278,484 to a district. This is an absolute difference of 30,699 and a percentage difference of 11.02%. By the method of major fractions, Michigan would have 18 with 292,006 to a district, and Arkansas would have 6 with 324,898 people to a district. The absolute difference in this case would be 32,892 and the percentage difference would be 11.26%. Thus the inequalities between the congressional districts whether absolute or relative, is smaller under the method of equal proportions.

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ENTOMOLOGY

Borers-From-Within Menace Supplies for Army and Navy

FOOD, clothing, construction material and other supplies for the Army and Navy are menaced by unseen borers-from-within, warned Prof. W. B. Herms, University of California entomologist. They are the armies of moths, weevils, termites and other destructive insects. Rats also can rob soldiers and sailors of the things the taxpayers buy for them. To prevent as much of these losses as possible, Prof. Herms recommended attaching trained insect fighters to the Quartermaster Corps. He pointed out that the Sanitary Corps already has its quota of entomologists.

Each year insects damage stored grain and milled products in the United States to an estimated extent of $300,000,000. That is a greater property damage than was inflicted by the British bombers and torpedo planes on the Italian Navy in the raid on Taranto, hailed as a great victory. Termites annually cause losses of more than $40,000,000, nearly half the price of a battleship, while clothes moths eat up well over $20,000,000 worth of woolens, or enough to pay for good-sized cruiser. Total losses traceable to