MATHEMATICS

Old Mathematical Puzzle Still Intrigues Science

ONE of the great mysteries in the history of mathematics is known as Fermat's last theorem. In the year 1637 brilliant Pierre Fermat, great French mathematician, wrote in the margin of an algebra book this statement:

"If n is a number greater than two, there are no whole numbers, a, b and c such that a^n plus b^n equals c^n. I have found a truly wonderful proof which this margin is too small to contain."

Unfortunately after Fermat's death in 1665 an examination of his papers showed that he never wrote out this "wonderful" proof. And in so doing Fermat left a mystery which probably every first rate mathematician since his time has puzzled over at least once.

Many of Fermat's mathematical followers spent entire lives on the problem and at least three large cash prizes (one in 1907 amounting to nearly $25,000) have been offered for a solution to Fermat's moment of inspiration. Like some modern movie or cigarette contest these prizes produced a veritable avalanche of "solutions", mostly from amateur mathematicians, and all false proofs. The present status is that the theorem has been proved for values of n less than 617.

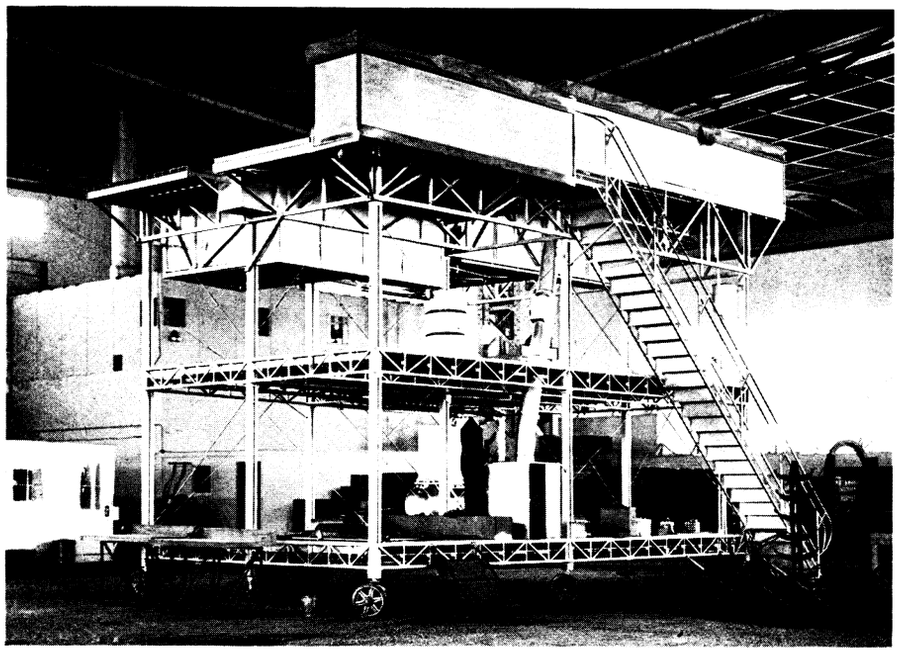
Reporting recently to the American Mathematical Society, Dr. J. Barkley Rosser of Cornell University described a method of treating a special, simplified form of Fermat's famous theorem so that many values of n can be handled at once. With this method he has proved this special case for all values of n less than 8,332,403.

This special form puts on the restriction that the number n must not divide a, b, or c. Previously Dickson in 1908 had proved this case for numbers up to 7,000 and in 1925 Beeger did it for numbers up to 14,000. By comparison Dr. Rosser's contribution is enormous.

Science News Letter, April 8, 1939

●RADIO

Prof. E. O. Lawrence, Director, Radiation Laboratory of the University of California, will be the guest scientist on the Science Service "Adventures in Science" program over the coast to coast network of the Columbia Broadcasting System, Saturday, April 15, 6:15 p. m. EST, 5:15 p. m. CST, 4:15 p. m. MST, 3:15 p. m. PST. Listen in on your local station. Listen in next Saturday.



"HOUSE ON WHEELS"

To give mechanics adequate working space while they are conditioning the huge planes between flights, this moveable double-decked staging has been constructed in Baltimore.

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Its invisible strands reach out from a stately New York skyscraper, where Juan T. Trippe and his busy fellow-executives may on a bright day see almost to the Long Island operations base from which the Clippers point their streamlined snouts eastward. The threads stretch out, too, from a building of immense proportions on a fill of land jutting into Chesapeake Bay just below Baltimore.

The crews of the four Clippers earmarked for the Atlantic service will total between 40 and 50 men. But to keep them in the air and to fill their compartment with passengers and freight a regiment of at least 500 will be required. A hundred professions are represented. Men trained in widely varying fields of work will be at their appointed stations on the day the first plane takes off. Radiomen who will keep in touch with the plane in flight will be there, at New York, Bermuda, Horta, Lisbon and other strategic points. Skilled meteorologists are already at work plotting the Atlantic weather. Even "front office" men have their appointed place in the detailed organization—to persuade you, the traveling public, to part with approximately $325 one way or $585 round trip; to satisfy your individual wants and desires; to plan cruises and European tours.

The complicated network on the Atlantic itself has been formed only during the last few years. Methods and organization were learned on the Caribbean and proved across the Pacific. In that time, Panam has learned aviation's lesson; the price of safe, regular operation is strict attention to the most minute details.

A transatlantic flight may take 25 hours to the passenger, but to the band of 100 men who will participate actively in its execution, it will last more than twice that length of time.

Twenty-four hours before the first passenger appears, skilled weathermen and air operators will already be at work laying the groundwork for a sheet of paper on which the plane's safe journey will largely be guided. It is the flight plan or flight time analysis—traffic department guide, crew bible, ground flight watch manual—more responsible for the great safety advances of the last decade than any other single contribution.

Before any commercial airplane flight leaves today, the pilot and dispatcher, if on a land line, or the master and operations manager, if on an overwater route, such as the airline across the Atlantic, will know, almost to the minute, what the duration of the flight will be. They will know the quantity of fuel that must be loaded to insure a safe margin, one-third more than should be required, and how it must be used; how many passengers and how much cargo may safe-