

SCIENCE NEWS

*Science Service, Washington, D. C.***THE USE OF RADIO FOR RAILROAD COMMUNICATION AND SIGNALING**

A NEW application of radio to increase efficiency, speed operations and insure safety on railroads will be the subject of hearings before a committee of the Federal Communications Commission to begin in Washington on September 13. Interest in the use of radio by railroads has reached an all-time peak, as witnessed by the fact that over 37 applications for two-way radio equipment development have been filed with the FCC, since January. Some permits have already been granted.

These hearings are for the purpose of developing information which may be of assistance and guidance to all parties in carrying out their further programs on the use of radio on railroads. Although no immediate determination of policy is contemplated, the present investigations may herald a new era of railroad safety, according to an interview with James Fly, chairman of the Federal Communications Commission, as follows:

"The applications now pending before the FCC cover two-way radio communications between the dispatcher and trains in motion, between trains, and between the head-end and rear-end of each train. The use of 'walkie-talkie' for flagmen and brakemen is also contemplated.

"All these services involve two-way radio communication as distinguished from carrier-current systems which transmit through the rails or other metallic circuits adjacent to the tracks, using low frequencies.

"The fact that to-day radio traffic control methods are used in directing the movement of railroad cars carrying high explosives is proof of the safety of the method. It has been stated that an engineer in a radio-equipped engine can do in three minutes with radio what he would otherwise take 15 to 20 minutes to do. Radio may be of great help in bottleneck freight yards where you now have to depend on flag, lantern or messenger signals. Operation would be more efficient because the engineer can acknowledge receipt of information and ask questions. In the event of derailment or other emergency, train crewmen would be able to carry on two-way communication with the nearest control point.

"It is possible that many terrible railroad accidents could have been averted if radio equipment had been available.

"Radio if put into regular use on trains will supplement existing telephone and telegraph equipment, rather than replace it. Although radio was tried out experimentally first by the New York Central Railroad as early as 1925, the railroads have not been as quick to take advantage of radio as the maritime world and the aviation industry.

"The FCC is very sympathetic regarding the need of radio for safety purposes by the railroads, and stands ready to grant applications as long as the operation requested will not interfere with other communications. At the same time we feel that the initiative should come from the railroads, and to avoid crowding of the channels

it may be that the railroads will have to work out some joint communications system.

"Use of radio in lieu of standard broadcast for railroad communications is a possibility. FM will not be affected by high interference levels in Diesel-electric locomotives, and in addition to operation in railroad yards, it can operate for intra- and inter-train communications on main lines. Practicable means may be found to use radar in the future to warn engineers of the approach of another train. With radar an engineer will be able to 'see' a train on the track ahead at a long distance."

Chairman Fly predicted that radio might some day be used to break the present wall of isolation between rail travelers and the outside world. He suggested that radio could provide two-way telephone communication from moving trains, and that radio and television could give travelers entertainment, thus combining a safer and speedier trip with all the comforts of a modern home.—ROBERT N. FARR.

ITEMS

EUCLID, the great ancient Greek mathematician, who lived 2,200 years ago, presented a classical problem that he was unable to solve and which remained unsolved until the present time. A solution was presented at the Wellesley meeting of the American Mathematical Society by Dr. Charles N. Moore, professor of mathematics at the University of Cincinnati. The total number of unsolved theoretical mathematical problems is now decreased by one. Euclid, Dr. Moore stated, proved that there exist an infinite number of primes, that is, numbers such as two, three, five and seven having no divisors but themselves and unity. Succeeding generations of mathematicians have guessed, but have never been able to prove, that there likewise exist an infinite number of prime-pairs, that is, successive primes which differ by two, such as 11, 13; 17, 19; 41, 43; and so on. At the meeting, Dr. Moore presented an involved but convincing paper giving his proof of the infinitude of prime-pairs.

If we can recognize the need for speed in building post-war houses as it was realized in constructing homes for war workers, we shall have taken the most significant step in the direction of solving our housing problem, according to a report made by Philip M. Klutznick, commissioner of the Federal Public Housing Authority, before a convention in Chicago of the American Home Economics Association. It was pointed out that we were compelled during the war to break loose from tradition and use our imagination. Vastly improved methods of production and ingenious use of substitutes were brought about by war housing. No one yet has computed the assets of the public housing program against actual costs and figured out that either a community or the nation was the loser. Each low-rent project has reduced disease, juvenile delinquency and crime—menaces which can not be confined to the slums, but which threaten every family in a community.