Don't forget that getting a rating is one thing and getting the material is another. You may have a dandy A-3 rating all ready to ship and then there may come in a big order on an A-1 rating, whereupon you will step out of line and wait for the A-1 material to be shipped.

Try to look at this whole thing in a rational manner and realize that we are at war and, pessimistic as the viewpoint now is, try to keep a stiff upper lip; try to be as optimistic as possible. Remember your viewpoint as well as the viewpoint of everybody else in this room is going to be reflected ten-fold in our every-day contacts. I am heart and soul and 100 percent for total defense and everything needed to make is possible. I am also firmly of the opinion that we should be ready to go when we are required to, but on the other hand I do not think we need to stand around with our hands in our pockets or to stop the ordinary wheels of industry unnecessarily when we can be doing something constructive in the interim. Business must go on as far as practicable; otherwise who is going to pay the income tax and who is going to buy Defense Bonds, which, after all, are another vital part of this Defense Program?

LIFE CHARACTERISTICS OF HIGHWAY SURFACE TYPES

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NOTE: Professor Winfrey's address was extemporaneous, supplemented by slides. This brief abstract of his subject matter is from Public Roads, March, 1941.

Annual increases in usage of motor vehicles have caused structures and roadways, built to the most modern standards as recently as 10 years ago, rapidly to become obsolete and in many instances to be replaced or reconstructed. With this in mind, an interesting study was started in 1934 by the Iowa State College and later incorporated as a phase of the statewide highway-planning surveys, designated as road-life studies, inaugurated in the several states under the direction of the Public Roads Administration.

The present report is confined to an analysis of data concerning the service-life characteristics of various surface types compiled for the rural portions of the primary state or Federal-aid systems of 26 states, covering approximately 210,000 miles of construction up to January 1, 1937. In addition, an analysis was made of the disposition of mileage at the time of retirement, involving slightly over 56,000 miles of retired surfacing in 23 of the 26 states. Retirement of a road surface is considered as being effected when (1) the
wearing surface undergoes a resurfacing operation (other than a routine operation), (2) the surface is reconstructed, (3) the road is abandoned, (4) the road is transferred to another public authority for continued maintenance and reconstruction, or (5) the surface reverts to a lower type through lack of adequate maintenance. Approximately 12 per cent of all retirements involved construction on new location.

Estimates of average service lives were obtained from statistical analyses involving the use of survivor curves. Data were available for some types as early as 1903, and a continuous record of the miles remaining in service for each year’s construction was available. Each year’s construction was analyzed separately when possible. In general it was found that the average service life of the lower types decreased and of the higher types increased during the period of 1910 to 1936. The predominating limits of average service lives were as follows:

- Soil surfaced: 5 to 14 years
- Gravel or stone: 6 to 13 years
- Bituminous surface-treated: 11 to 21 years
- Mixed bituminous: 14 to 22 years
- Bituminous penetration: 15 to 17 years
- Bituminous concrete: 13 to 20 years
- Portland-cement concrete: 17 to 24 years
- Brick or block: 18 to 21 years

Additional problems in connection with right-of-way, grading, and structures are being studied in the highway-planning surveys. The road-life studies also include roadway and bridge construction and maintenance cost studies. Eventually, data will be available for many specific analyses of highway costs, economic selection of projects, and other administrative and engineering problems, which in some way depend upon service lives for their solutions. The knowledge will be extended as additional states complete the compilations outlined in the original road-life studies and as they are continued and extended. Further, analyses by individual states will afford results of more specific application to the individual highway systems than can be obtained wholly by this analysis of the combined data from 26 states.

ADVANCING THE INTERESTS OF ENGINEERS

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It may sound like the essence of selfishness to discuss this subject at a time when our nation is at war. But this national emergency is illuminating our past failures and our present needs.

Our engineering educators report a shortage of some fifty thousand engineers properly to man our industrial and military effort on a national scale. To remedy this situation