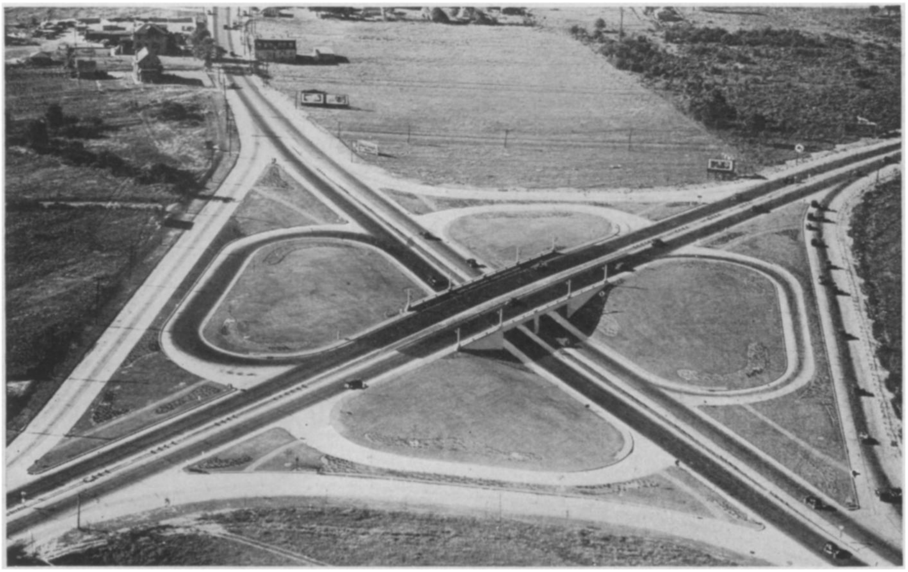

TRAFFIC ENGINEER'S HANDIWORK

One of New Jersey's famous "clover-leaf" intersections, one of the ways in which the traffic engineer keeps traffic flowing swiftly, smoothly and safely. Intersections, as most of them are today, are ideal for the Grim Reaper and the traffic jam.

ENGINEERING

A New Profession—It Is Traffic Control Engineering

Millions of Motor Cars Have Created New Problems Of Safety and Movement; 500 Men Are Studying Them

See Front Cover

A NEW kind of professional man and scientific expert is coming into his own today in response to the needs of a nation on wheels.

He is the traffic engineer, most recent addition to the fraternity of professional technical men without whom the twentieth century as we know it would be an utter impossibility.

Five hundred of his kind are at work right now, thinking not so much about building roads or repairing them, but about a new job imposed by millions of motor cars: speeding traffic safely and sanely on its way. He and others are receiving their highly specialized training not only on the job, but in a number of special technical school courses, of which the most are offered by a 13-year-old institution first at Harvard and now at Yale, the Bureau for Street Traffic Research. More than 1500 of his fellows should be at work for city, state and Federal governments by 1950, in the opinion of Maxwell Halsey, associate director of the Bureau. But there will not be room for many more than that, it seems to Mr. Halsey, so do not rush to traffic school.

The traffic control engineer's concern is not with the structure of a road itself. It is with laying out the road so that traffic can move swiftly. It is with traffic signals, road markers and warning signs. He is concerned with intersections —New Jersey's famous clover-leaf intersections on main highways leading out of New York City are typical of the traffic engineer's work. He is also very much concerned with designing curves such that automobiles can move around them safely at the prevailing speeds on that particular road. Control of parking is a special headache that it is his job to salve or solve. Street and highway lighting are in his province.

His field is indeed a pioneering one because it has been subjected to special scrutiny for a relatively few years. One of his jobs is to find out more about the flow of traffic: what kinds of vehicles go where, when and at what speed? Such knowledge is indispensable to proper planning. How do the vast majority of accidents occur, and what percentages fall into the different categories of accidents? Such information is not yet being gathered on as wide a scale as topflight highway men would like.

Work for Governments

All but 50 of the 500 traffic engineers now at work are employed by the government, working either for the Federal government, the state governments or about 35 cities with formalized traffic control units as part of their municipal administrations. Your traffic engineer is no policeman; in a certain sense, his job is to tell the policeman what to do about regulating traffic. With about 30,000,000 vehicles using the streets and highways of the United States, the traffic problem is entirely too complex to be solved incidentally to the general exercise of police power.

Emergence of the traffic engineer is one of the marks of the fourth stage of auto transport's history, Mr. Halsey declares.

Before it was realized that keeping autos on the move is a separate profession in itself, America passed through a stage of rapidly mounting traffic and an appalling climb in the number of automobile accidents: from 10,723 in 1918 to 27,996 in 1928 to 38,000 in 1937. Only then did a large number of people begin to realize a fundamental truth which many far-sighted engincers and safety experts had been hammering home for years: America was driving millions of autos designed for comfortable travel at speeds of 60 miles an hour on highways whose basic characteristics go back to a slower age and which are safe for no more than 40 miles an hour. This at least was a partial explanation of many of the mishaps which were taking (and still do take) a fatality and casualty toll reminiscent of a war.

From the Surface Up

Until this time highway engineering was concerned almost exclusively with finding out where roads ought to go and with their construction from the surface of the road down. But this traffic problem indicated that specialized knowledge is needed to solve the problems above the surface of the road. The organization of government street and highway agencies reflected this condition, Mr. Halsey points out; though they had many men expert in building and in repairing highways, they had almost no specialists in controlling the way the roads were used.

Your traffic engineer is called upon to command many specialized forms of knowledge, all of which are now taught in one or more universities. His training requirements are shown in Mr. Halsey's breakdown of what the traffic engineer does with his time:

For 70 per cent. of his time, he tackles problems of mechanical control and parking, involving signs and regulations, marking, signals, islands and intersections, illumination and terminal facilities. For 10 per cent., he works on designing new roads and planning through traffic roads, oneway streets, zones and major street systems. For 5 per cent., he does traffic surveys, accident records, administration and the economics of the automobile. The rest of his time is devoted to problems of legislation, educating the public and enforcement.

Young men entering this new field should have an engineering degree before they take up the specialized traffic control work, Mr. Halsey thinks.

The illustration on the front cover of this week's SCIENCE NEWS LETTER shows an intersection in the city of tomorrow, as worked out in the General Motors' Futurama at the New York World's Fair. Pedestrians are on an entirely different level. Yes, there's a jaywalker in the picture on the auto level. He'll probably be arrested unless one of the autos gets him first.

Science News Letter, June 17, 1939

• Earth Trembles

Information collected by Science Service from seismological observatories and relayed to the U. S. Coast and Geodetic Survey resulted in the location of the following preliminary epicenter:

Thursday, June 8, 3:47.0 p. m., EST

In Samoan Islands southeast of Apia. Latitude, 15 degrees south. Longitude, 170 degrees west. Moderately strong.

Stations cooperating with Science Service in reporting earthquakes recorded on their seismographs are:

University of Alaska, College, Alaska; Apia Observatory, Apia, Western Samoa; University of California, Berkeley, Calif.; Dominion Observatory, Ottawa; Dominion Meteorological Observatory, Victoria, B. C.; The Franklin Institute, Philadelphia; Harvard University Observatory, Harvard, Mass.; University of Hawaii, Honolulu; Hong Kong Observatory, Hong Kong, China; Magnetic Observatory of the Carnegie Institution of Washington, Huancayo, Peru; Massachusetts Institute of Technology, East Machias, Maine; University of Michigan, Ann Arbor, Mich.; Montana School of Mines, Butte, Mont.; Montana State College, Bozeman, Mont.; Pennsylvania State College, State College, Pa.; Phu Lien Observatory, near Hanoi, French Indo-China; Seismological Observatory, Pasadena, Calif.; University of South Carolina, Columbia, S. C.; U. S. Weather Bureau, University of Chicago; University of Wisconsin, Madison, Wis.; Zikawei Observatory, near Shanghai, China; observatories of the Jesuit Seismological Association at Canisius College, Buffalo, N. Y., Fordham University, New York City; Georgetown University, Washington, D. C.; St. Louis University, St. Louis; St. Xavier College, Cincinnati, and Weston College, Weston, Mass.; observatories of the U. S. Coast and Geodetic Survey at San Juan, P. R., Sitka, Alaska, Tucson, Ariz., and Ukiah, Calif.

AERONAUTICS

Airport Lighting System Enables Landings on Bad Days

"Metered Light" With Powerful Lamp Can Be Seen Through Bad Weather, But Does Not Blind with Glare

A RADICALLY new airport lighting system, using controlled or "metered" light which enables a pilot, with proper radio approach aids, to land by ordinary visual contact almost regardless of the weather's thickness, is successfully passing tests at the Civil Aeronautics Authority's field experiment station at the Indianapolis airport.

Developed by a veteran airman turned lighting expert after years of listening to the plaints of old-time mail pilots sitting down under emergency conditions at his hometown airport, it provides a line of runway-marking and approach lights visible at least 500 feet ahead of the plane under all but the most phenomenal "ceiling zero, visibility zero" conditions. Once radio has taken the plane to the beginning of the guiding row of lamps, they are all the pilot needs.

Its introduction to airports throughout the United States, expected within the next year or two, should be a step whose importance is difficult to exaggerate, in the opinion of government air scientists. It brings nearer aviation's goal —all-weather airline service with railroad regularity. It provides an alternative to, and may be better than, the completely blind landing.

Its principle—controlled or "metered" light—is only beginning to be applied in other lighting fields.

Heart of the new system, John B. Bartow, the barnstormer and airplane sales agent turned inventor, explains, is a complicated lens which so controls the light emitted from a powerful lamp that the lamp looks just as bright to the on-course pilot whether he is 100 feet or 500 feet away. In other words, enough candlepower is provided to make the light visible at 500 feet under the thickest weather conditions, except of the most phenomenal sort. This powerful light is so controlled it does not become blinding as the pilot approaches through the fog. There is nothing unusual or new about the lamps; but without the lens system, they are utterly useless.

The system takes advantage of the changing angle between the moving plane and the lamps, which are located at each side of the runway and the approach. The lights face the approaching plane. The most light is transmitted through the center section of the lens, to show farthest along the plane's path; the least light is transmitted through the side of the lens which is in the pilot's line of sight as he nears and passes the lamp. The light is transmitted in vertical planes in analogous fashion to the vertical plane of radio range signals.

The lights are spaced about 200 feet apart. For a 4,000-foot runway and 2,000-foot approaches, as nearly typical of America's airline runways as one can guess, 80 lights in all are required. Four different colors are used: green to mark the approach sector, white the proper part of the runway and yellow the end of the runway, while the back sides of all lamps glow red to show the pilot he is heading in the wrong direction.

The lights have been tested quietly and without the benefit of any publicity since last January, when they were first placed in operation. Though they are strictly experimental and are therefore out beyond the end of one of the paved runways, they have been used on more than one occasion by airline pilots landing at Indianapolis under difficult conditions. They have met the pilots' acid test and were in fact the subject of comment by the men in the front seats when they were removed for some experimental changes. The pilots wanted them back immediately.

Science News Letter, June 17, 1939