



**CONSTRUCTION DIVISION**  
Lester W. Novinger

**NEW CASTLE COUNTY DIVISION**  
Leslie L. Maxwell

**KENT COUNTY DIVISION**  
W. F. McFaul, Jr.

**SUSSEX COUNTY DIVISION**  
John H. McWilliams, Jr.

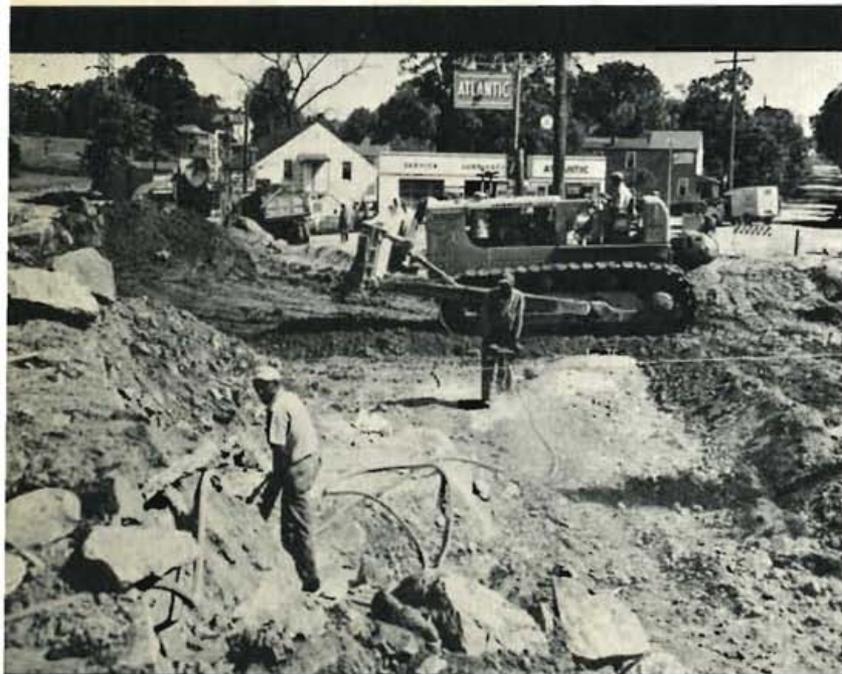
**RIGHT OF WAY DIVISION**  
Herbert L. Keene

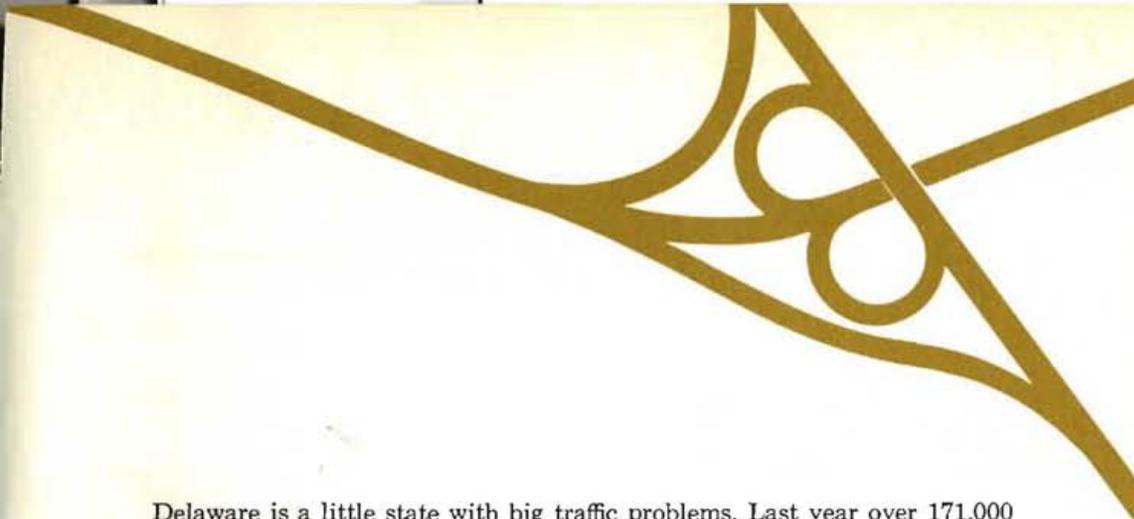
**FEDERAL AID DIVISION**  
F. W. Vanderslice

**UTILITIES DIVISION**  
E. Powell Smith

CONSTRUCTION • MAINTENANCE • RIGHT OF WAY • FEDERAL AID • UTILITIES

*better highways  
in the making*





Delaware is a little state with big traffic problems. Last year over 171,000 vehicles were registered here.

What's more, Delaware, which is shaped something like a funnel, virtually serves that function in the great north-south arterial traffic flow on the nation's teeming east coast. All year round heavy through traffic funnels over Delaware highways, southbound from New England, New York, and New Jersey; northbound from Baltimore, Washington, and points south as far as Florida.

The result is that Delaware is constantly threatened by the motor age's most dreaded ailment—hardening of the traffic arteries. To prevent that, the state highway department wages a continuing and so far successful preventive campaign of highway construction and maintenance.

### KEEPING DELAWARE ON THE MOVE

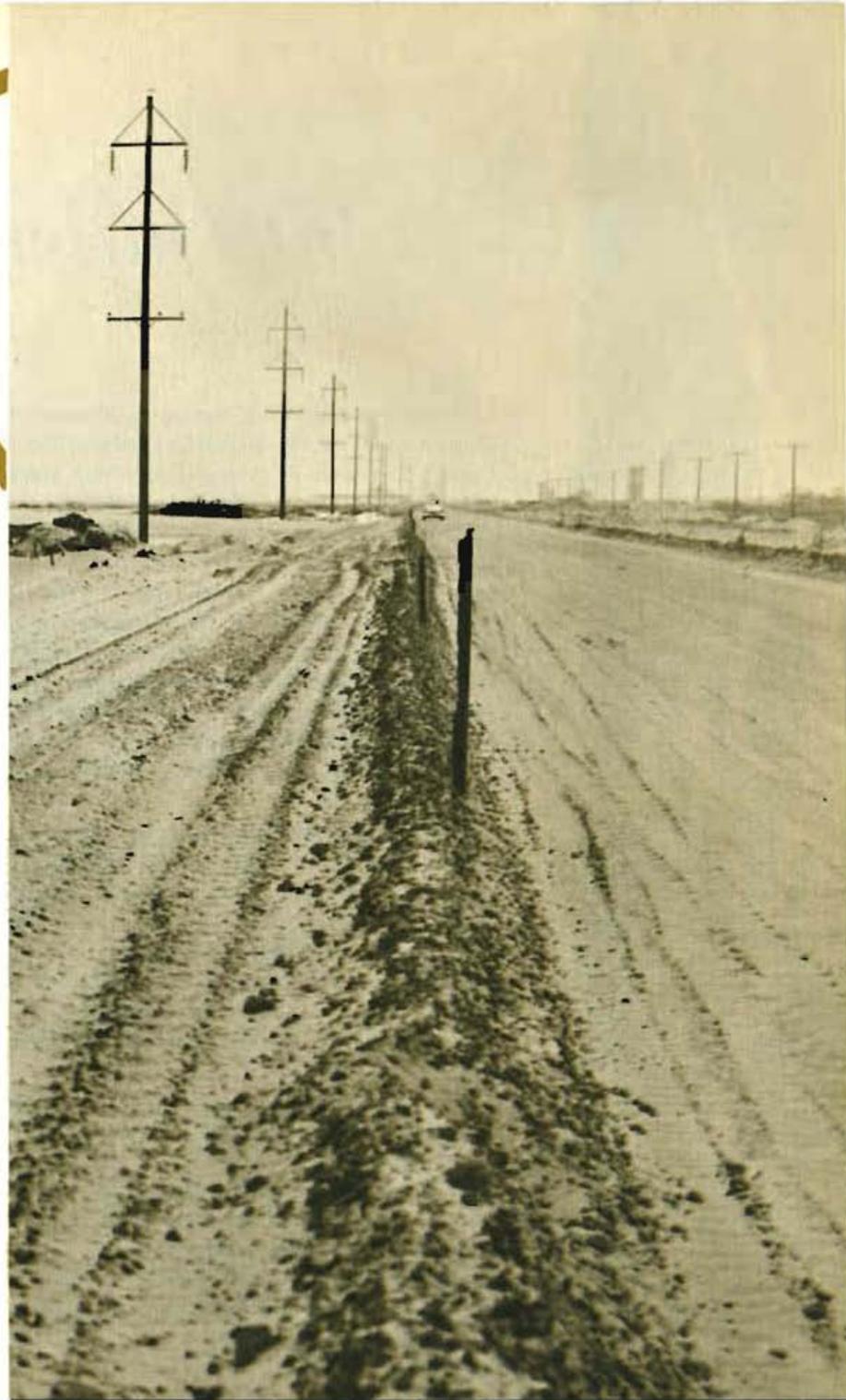
To make sure that Delaware motorists keep on the move, the state highway department during the last fiscal year supervised 106 separate construction contracts covering 906 miles of highway (inclusive of dirt road resurfacing) for the biggest construction year in the department's history.

The total cost came to \$19,314,903.64 in state and federal aid funds, a by no means exorbitant price to keep Delaware's highway system among the best in the nation.

Some idea of the increased pressure on the department can be gleaned from the record. In 1921, for instance, the infancy of the motor age, construction contracts covered a mere 57.8 miles.

Construction costs, then, when labor averaged 30 cents an hour, were about \$40,000 a mile for a 16-foot concrete road. Nowadays, the cost of a modern 25-foot road is about \$150,000 a mile in rural areas.

The future promises little let-up either in costs or the demand for more highways. The steady climb in vehicle registrations and traffic figures inevitably means that the department must keep building to stay ahead of Delaware's motorists.



Sand from the sea pumped by huge dredge laid the base for new four-lane highway between Indian River Inlet and Bethany Beach.

# *906 miles of highway in 1958*

Better highways keep coming to Delaware through the dovetailed skills of the department's Construction Division and three County Divisions. Working closely with them are the Right of Way, Federal Aid, and Utilities divisions.

The Construction Division under Lester W. Novinger, is charged principally with seeing that Delaware gets what it pays for in highways. Skilled inspectors from this or the county divisions are assigned to every construction project to check day by day the work of private contractors. Any variations from the plans must get department approval before the work can proceed. These routine checks are topped by a final inspection, a last double-check, before the work is accepted to insure that the department's job specifications have been met in every detail.

The division's engineers also are expected to keep informed on better ways to build better highways. They suggest new ideas, improved equipment or better construction methods to the private contractors.

All contractors doing widening work are now using slip form pavers for placing the base course in concrete widening jobs. On one job last year, almost two miles (8,500 feet) of five-foot wide, eight-inch deep concrete widening were laid by this method in one day.

Some contractors are using vibratory screen construction for finishing concrete base courses. A small vibratory roller has been used to compact sub-grades with excellent results. Several contractors are experimenting with a machine to place concrete curbs without the use of forms. It is too early to say whether this last will prove satisfactory.

Besides its other duties, the Construction Division processes all cost estimates, approves prices on special work, and assists the three county divisions.

## **CONSTRUCTION RECORD**

The department's active contracts in the last fiscal year (June, 1957 to June, 1958) break down as follows: 73 contracts awarded, covering 345 miles, valued at \$14,929,842.80; 33 contracts carried over from the previous year, covering 561 miles, valued at \$4,385,060.84.

The grand total: 106 active contracts, covering 906 miles, valued at \$19,314,903.64.

Some of the major construction projects begun during the year were: Silverside Road from Concord Pike to Marsh Road; Miller Road from Lea Boulevard to Concord Pike; U. S. 13 at Naaman's Road; Lancaster Pike from DuPont Road to Center Road; Curtis Mill Road from Newark to Possum Park Road; U. S. Route 13 from St. George's to State Road; and Wilmington's Fourth Street from Union to Market Street.

## **HIGHWAY UPKEEP**

No sooner is a highway built than it begins to deteriorate. The cause is not only the beating it takes from traffic. The real enemy of highways is nature, especially the weather. Freezing and thawing crack and crumble surfaces. Wet and dry spells eat at roadways. Rushing storm drainage water scoops out the under surfaces, causing cave-ins or long meandering cracks.

The trick is to stop this decay before it gets so bad that the entire road needs rebuilding. Good maintenance means not only better roads but, in the long run, cheaper roads. Even so, the cost of maintenance is no small matter. Last year the department spent \$4,131,748.71 or \$857.50 a mile for road upkeep, exclusive of snow removal. Compare this with 1921 when maintenance costs for concrete roads were estimated at \$250 a mile.



Baynard Boulevard and Concord Avenue intersection was a dangerous traffic bottleneck. Modern thoughtful engineering created this new intersection.



Equipment, modern, efficient, necessary, is expensive.

*never  
ending  
job*

At best the job of maintenance and repairs is a grindingly unending one on Delaware's 3600 miles of surfaced roadway. But when Delaware is hit by a vicious winter, as it was last year, the damage facing the maintenance crews can be appalling.

The brunt of the repair work falls on the three county divisions. In New Castle County, then headed by L. L. Maxwell, division engineer, highway crews, merely to patch holes last year, used over eight thousand tons of cold patch material. To plug cracks, they poured 5,557 gallons of filler. In addition, two extensive surface treatment contracts consumed 825,405.82 gallons of asphalt, 30,461 tons of chips, and 6,223 tons of slag.

To drain away eroding storm water, the crews laid or replaced 4,888 feet of various size pipe. Also to carry away water they conducted a continuous program of grading and repairing ditches and shoulders.

#### NEW CASTLE'S NEW CONSTRUCTION

County forces also assist with construction projects. Last year 38 active contracts were supervised by the New Castle County division, ranging from a \$3,920 job to one for \$1,244,359. About 40 inspectors supervised the work of contractors.

Another chore for the county is the repair and maintenance of bridges, including nine movable spans over navigable water. Last year a ramp on Wilmington's Seventh Street Bridge had

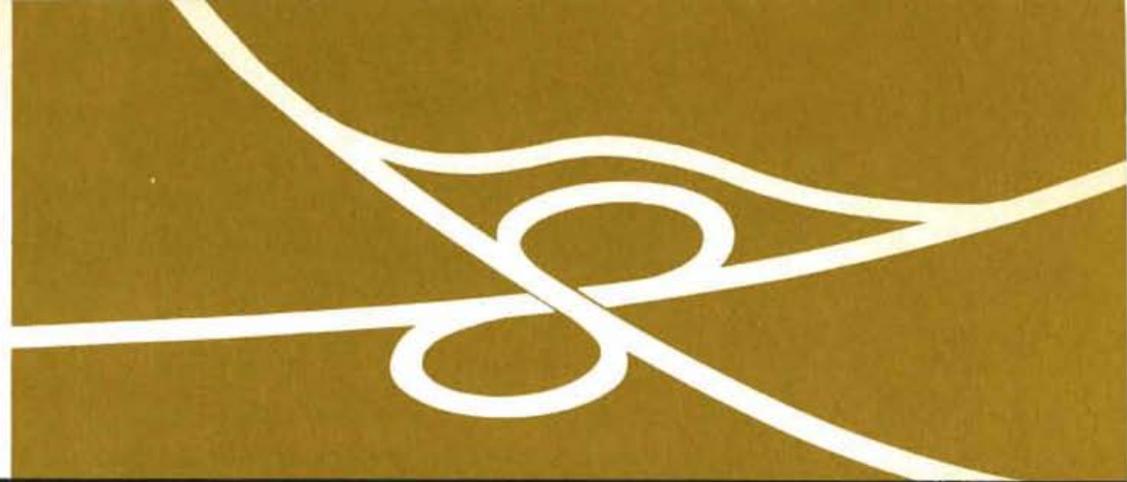
Spring waters are hard on highways.



to be rebuilt. On the Third Street Bridge the steel deck had to be welded in several areas and three broken gates were replaced. Safety railing was installed at the Newport Bridge and the steel deck was welded. Much other minor bridge maintenance was necessary.

The New Castle County division also carried out 17 field survey projects and prepared 190 estimates.

A little-known sideline for the division is the maintenance of Fort Christina State Park, site of the Swedes' original landing in Wilmington. Incidentally the division reports 9,722 visitors to the little park last year.



This is what is left when the water goes.

## DAMAGE IN KENT

The 1957-58 winter, one of the worst on record in Kent County, caused a wholesale break-up of about 25 miles of old and new roads. This was followed by one of the wettest springs in memory. Rushing drainage water added to the havoc facing the Kent County division's crews under W. F. McFaul, Jr., division engineer.

The first step toward recovery was an extensive maintenance contract to rebuild the wrecked roads. By June over 120 miles of the 250 were completed. In other areas, patching and road edge repair were pushed. The County's crews were reinforced by full-time crews from private contractors.

On still another front, extensive work was done on hard surfacing of dirt shoulders to curb road erosion from storm drainage. More of this work was done last year than ever before. For instance, the entire shoulder on Route 13 northbound was hard surfaced from Dover to Bishops Corner.

The division also supervised 33 construction contracts, valued at \$4,390,000 during the year. A team of 19 inspectors, assisted by four engineering aides, was kept in the field. Among the contracts were: Dover's Division Street; Route 13 northbound lane from Dover to Bishops Corner; South Little Creek Road; and Dover's Court Street Bridge.

The division's new maintenance yard at the Danner Pit, west of Bay Road, is 50 per cent complete. This will replace the Moores Lake Yard being vacated because it is too near residential areas.

Because it is headquartered at the state capitol, the Kent County Division often is called on for special services. It is not uncommon, for instance, to get a request for a crane to move a heavy safe for some state agency. A helping hand is given when needed to the upkeep of state grounds and county parks. When it doesn't interfere with the regular work, the division also aids civic clubs and athletic groups.



An expensively beautiful scene.

### *Winter snows and summer "blow-ups."*

Winter cold and spring thaw left costly scars on Sussex County roads in 1957-58. To these were added a hot weather problem known as "blow-ups." Road blow-ups were frequent in the hot summer of 1957. All day the roads cooked in the Sussex flatlands, then after nightfall they cooled suddenly, bubbled up, the surface cracking open like a crater.

The winter that followed was severe. On its heels came an unusually damaging spring thaw. The surface melted but the ground below remained frozen. Melting water couldn't settle. The result was several hundred thousand dollars in damage in Sussex to blacktop roads built in the previous three or four years.

From March to the end of June the di-

vision's entire maintenance force worked steadily to repair the damage of this one thaw. Only after that, could normal maintenance begin again.

It all added up to one of the division's busiest years. A total of 240 miles of road was renewed, either by resurfacing or patching. The cost was \$374,000.

In addition, the county forces assisted with major construction contracts. Among these were: Bethany Beach to Indian River Inlet; and Fenwick Island Bridge.

### **BLIZZARDS OF '58**

In 1922 the highway department, noting that "the traveling public is entitled to the use of improved roads 365 days a year,"

first recommended setting aside money for snow removal.

Since then, shoving away the white stuff has grown into a massive operation for the three county divisions. Last year 50 inches fell on New Castle County. It was almost as bad in Kent and Sussex. In the February storm, when biting winds whipped up towering drifts, Delaware was declared in a state of highway emergency.

For the county crews winter's wonderland became a nightmare of dogged, back-breaking work. Eight days and nights straight they worked after the February storm with only short breaks for food and rest. In Kent and New Castle Counties, Delaware Army National Guard tanks and

heavy duty wreckers were called out to break paths. The tanks doubled as crude ambulances to get the sick to hospitals. New Castle County's forces were overwhelmed and called on the Sussex division for reinforcements. Sussex was more fortunate in that its two major snowfalls were confined to only parts of the county. But even there it was necessary on some occasions to bring in heavy equipment and men.

The price of Operation Snowdrift was \$557,917.10. In New Castle County alone the labor costs came to \$218,707.27, including regular and overtime hours, extra help and pay to the Sussex reinforcements. Also during the winter the New Castle crews

spread 185 tons of salt, 74.9 tons of calcium and 6,580 tons of sand.

Preventive measures recommended: more snow fences and more heavy equipment.

## HIGHWAY BEAUTIFICATION

The attractive landscaping, clean picnic areas, the well-groomed center strips that help make driving in Delaware a pleasant experience are all in the care of the three county divisions. Mowing of center strips and shoulders begins in April and continues until frost. Bare spots are seeded in season. Flowering shrubs and trees get expert attention. Sprays are used with mixed success on

weeds and other objectionable growth.

Last year the highway landscapers noted a steady spread in Dutch Elm disease, especially in Kent County. Forty-six elms had to be removed there last year, compared with 19 in 1956 and only 4 in 1955. Hope of saving the remainder is small, because money is lacking for a proper spraying program.

Always a seasonable problem for the county crews are the "litter bugs." Despite "Keep Highway Clean" signs and conspicuously painted trash cans, these sloppy picnickers and motorists keep trash crews busy mopping up after them. The only answer is: strict enforcement of anti-litter laws.

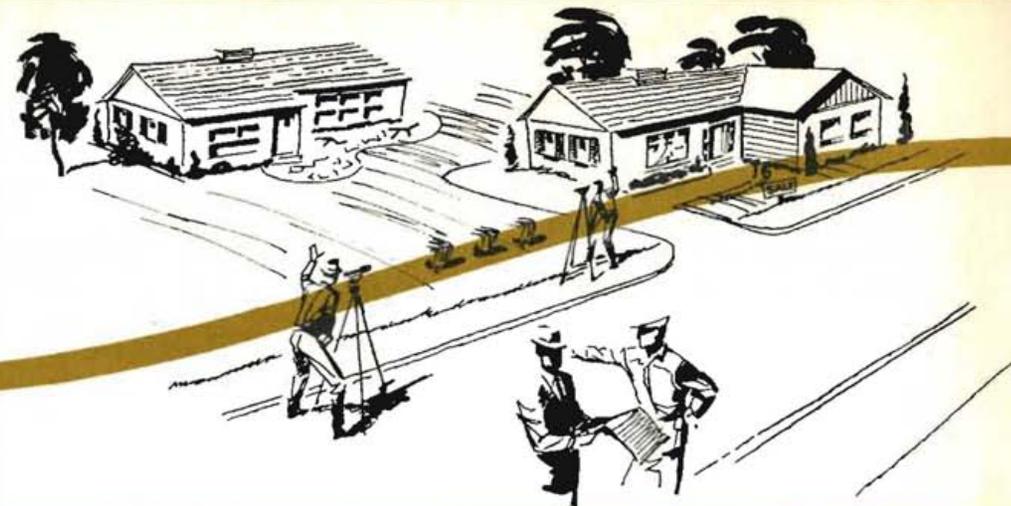


The little white line that means so much to safe driving goes on this way.



Insecticide spray keeps duPont Parkway one of the most beautiful in the world.

*the pathfinders...*



When a new highway cuts across hitherto open country—or even when an existing highway is widened—the state must secure title from private owners to land for the route.

The delicate, often prolonged negotiations for securing these “rights of way” fall to the Right of Way Division under H. L. Keene, chief agent.

The department is ready to pay a fair price for land it acquires. Most owners readily cooperate; some even convey rights free of charge in the interest of better roads. But in cases where owners demand more than the actual value of the land, plus reasonable damages, the state may condemn under its power of eminent domain.

Probably the most complicated right of way negotiations last year were those in the Bethany Beach area. Court suits held up acquisitions. When the courts decided in favor of the state, the rights of way had to be acquired a hop and a skip ahead of the contractor.

In some cases, the department pays home

owners for moving entire dwellings. The department is thinking of handling home moving as a regular highway contract, which would include regular inspections to insure that the job is done properly and that the home owner's interests are protected.

An idea of the painstaking legal formalities needed to pin down a highway route is shown in the division's statistics for last year, one of the busiest to date. Right of way agents obtained 1,517 options, 1,514 easements, 256 ditch agreements, 279 deeds, 115 releases. They prepared 150 property plats and 351 property descriptions.

Court proceedings also took much time. Eleven condemnation cases were heard, and division agents took part in three pre-trial arguments.

Cost of the division's operations for the year: \$1,603,548.

### UTILITIES DIVISION

When Wilmington's Fourth Street was resurfaced and widened last year, 158 electric

poles had to be pulled up, moved back three feet, and replanted. All power lines had to be restrung. Underground sewer, water, and gas lines had to be replaced.

That's one example of the briar patch of incidental problems engineers get into when they start a new highway project.

Making sure that these problems are cleared up ahead of the contractor is the job of the Utilities Division under E. Powell Smith. He and his two utility coordinators, both engineers, work closely with private utility companies, which carry out the work.

The important thing is to let the companies know well in advance of a new project just what will be required. To insure this, a division coordinator is assigned to New Castle County and another to Kent and Sussex. They get together regularly with utility company representatives.

In addition, regular monthly meetings are held by specialists from the highway department, the utility companies, and the contractors. At these sessions progress on cur-

rent projects and plans for future ones are gone over point by point.

Finally, before the start of every project a meeting is held by all parties to go over the scope and schedule of operations.

Long-range planning is pinned down at further conferences during the year when projects still in the design stage are discussed with a view to ironing out conflicts. In this way major complications are sidestepped and substantial savings achieved both for the state and the companies.

Another whole set of meetings has developed around plans for the proposed Interstate Highway (Route FAI-1). The object here has been to determine the extent, exact nature, and the cost of the utility adjustments which are reimbursable to the companies.

## FEDERAL AID

In the building of major roads which also will function as part of the national highway system, Delaware, like all states, gets financial help from the federal government, usually on a fifty-fifty matching fund agreement.

Last fiscal year Delaware received \$4,957,382.41. Another \$1,706,285 in federal money was allotted the state as part of the government's emergency effort to combat the recession. These funds, earmarked for primary and secondary systems, were to be matched on a one-third state, two-third federal basis, a departure from the traditional fifty-fifty formula. To enable the state to put up the matching funds, the government also made available \$527,145 as a loan to be deducted from future federal allotments.

For the fiscal year 1959, a total of

\$16,151,382.41 has been made available for matching by the state.

Dovetailing the efforts of the highway department with the U. S. Bureau of Public Roads on matters of federal aid is the job of the department's Federal Aid Division under Frank W. Vanderslice.

## BETTER AND SAFER

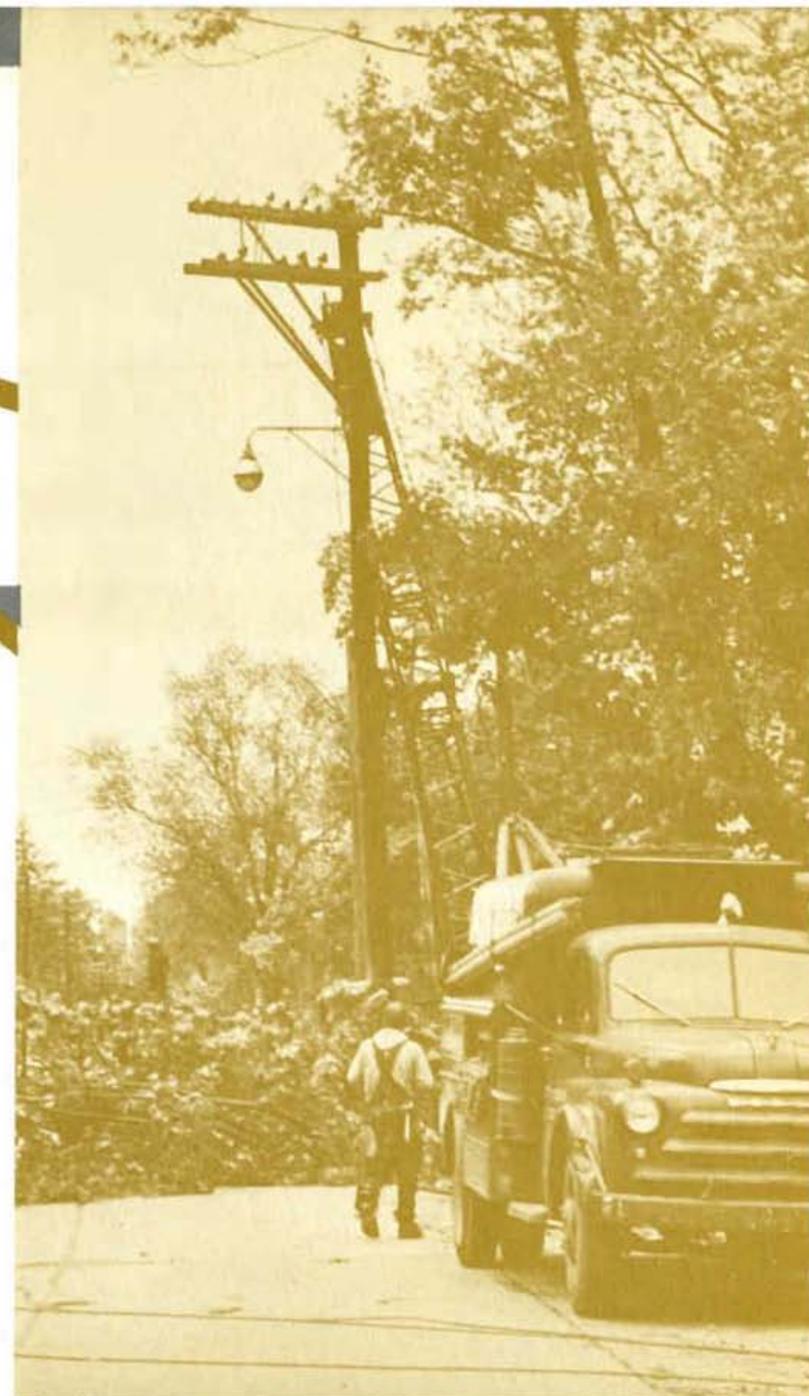
Back in 1922 the highway department first recommended "the marking of a line along the center of the pavement . . . such a marking, showing each driver his exact right of way, would . . . materially reduce the number of accidents."

Ever since those early days the department has been striving not only to make better highways but safer ones. This concern extends through every division. It influences highway building from the design through the final landscaping, even to the placement of trees. Every stretch of road is posted with signs to guide, warn, direct, or inform Delaware's motorists so that they may drive more safely.

Every new safety device or design idea applicable to highway systems is scrutinized by the department. If it seems practical, it is given a try.

\* \* \*

The last fiscal year was one of sound accomplishment for the highway department. The basic reason—even more so than technical skill and know-how—was the esprit de corps of the staff at all levels. It is this pride on the part of all our employees in doing an important job well that results in a highway system of which the entire staff can be proud.



Utility companies work closely with the department to keep lines free from obstruction.

