

The commissioner should be a man of such high character and standing as to command the respect and confidence of the public at large. He should be of proven executive ability, with a thorough knowledge of how to organize such a department, and be chosen from the engineering profession if possible, otherwise he should be one who has had to do with the construction of engineering works.

Types of Roads.—The particular kind of a road to use in a certain locality is a problem which depends for its proper solution on a number of important factors, such as the kind and amount of traffic, the sub-soil, the climatic conditions, the cost of construction and maintenance, and the amount of money available for construction and maintenance. It would be entirely out of place, therefore, to recommend any particular types of roads, beyond calling attention to the fact that there are two fundamental requirements which are accepted as axiomatic by all who are authorities in road building, namely, that in all cases there should be perfect sub-drainage and a rigid foundation. There is no need for extensive experimentation in the near future on the part of the State of New York as to what kind of roads to build, for so many methods have been tried both at home and abroad that intelligent investigation of what has been already done would be sufficient to indicate what types of roads and road surfaces should be eliminated from consideration, and what types are best suited for particular localities.

It will doubtless become advisable from time to time to experiment with new types, but this may be done on a small and inexpensive scale. A short stretch, say, of a few hundred feet, will give just as valuable data, as regards durability, etc., if careful and intelligent observations are made, as many miles.

In connection with this problem, it is important that we recognize the fact that the difficulty of providing durable roads has been greatly augmented by the introduction of automobile traffic; the wear and tear resulting in their use being much greater than from horse vehicles, and that we must make up our mind to make much more durable types of roads than we have been accustomed to in the past.

There can be no doubt but that the rapidly moving automobile and auto truck have come to stay. This method of transportation is yet in its infancy, and before another generation, if proper roads shall have been provided to take care of it, the economic benefit to the community, resulting from their use, will be of great value.

Another important consideration which should not be lost sight of is the fact that the money to construct the new roads in this State is raised by bond issues, maturing in fifty years from the date of issue. It would be manifestly unfair, therefore, to future generations, to construct roads with this money that last only a few years, if more durable types requiring less annual expenditure for maintenance are economically practicable.

Maintenance.—The proper maintenance and repair of existing roads is just as important as the construction of new ones. England, France and some other countries of Europe, are far ahead of us in the thoroughness and efficiency with which they keep up their roads.

It is most important that the Department of Highways should be thoroughly organized for this purpose, so that repairs may be promptly, economically and efficiently made, for by promptly repairing small defects, not only is the road made better for constant service, but the cost of maintenance is decreased.

The amount allowed in the budget for maintenance should be sufficient to avoid any delays in making immediate repairs.

Additional Recommendations.—In addition to the foregoing, I make the following recommendations on matters not yet touched upon:—

Existing contracts for roads which are undesirable should not be executed, but cancelled wherever possible.

New contracts should not be let until the commissioner shall have been able to thoroughly organize his department, and investigate the plans and specifications which are now adopted by the department as standard types of construction, and he should, of course, be given ample time to prepare revised plans and specifications.

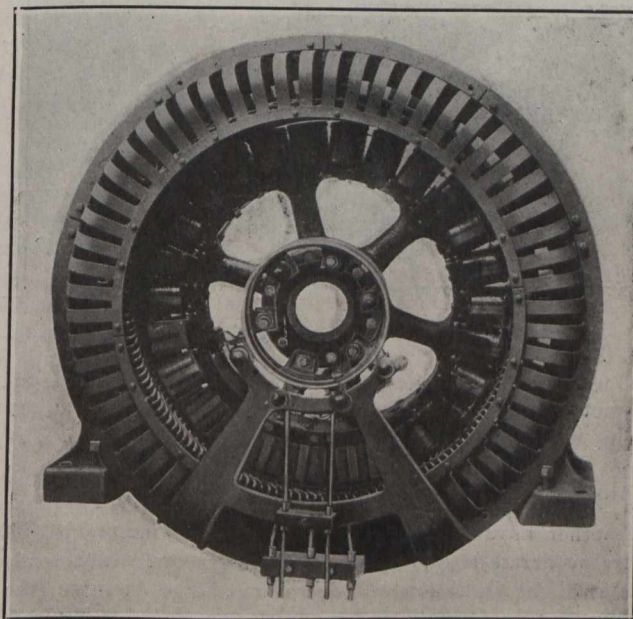
Supplementary agreements, radically changing the character of construction in work contracted for, should be avoided.

Specifications should be revised and should clearly describe the work to be done, and there should be a uniform interpretation of them by the department.

A thorough study of the highway map of the State should be made without delay. It should be revised where necessary, so as to unite the present State and county highway systems.

SYNCHRONOUS MOTORS FOR DRIVING COMPRESSORS.

The use of synchronous motors for driving compressors is comparatively new practice. A few years ago the synchronous motor was not considered well adapted for this service but recent improvements in the design of these motors have entirely changed this view. To-day synchronous motor drive is used for many compressors in various parts of the country, and it has proved so efficient and reliable that the fact that this type of drive is the most satisfactory for this service can now be considered established.



Synchronous Motor.

A typical example of this kind of utilization is furnished by the compressors at the Wickwire Mining Company's mines at Iron River, Mich. There are two compressors on this property, each driven by a Westinghouse self-starting synchronous motor. Both compressors are of Ingersoll-Rand make; one delivers 1,352 cubic feet of free air per minute at 200 r.p.m. and is driven by a 220 horse-power mo-