An objection to them is that as they have to be manufactured at one location the entire surface of the pavement must be transported from the plant to the street, while with sheet asphalt the plant can be located at a convenient point so that the haul is not so large. This makes a difference in the expense against the asphalt blocks. On the other hand, however, an asphalt block pavement can be repaired without the use of a mixing plant, as the blocks can be purchased and brought upon the street and used when desired.

Asphalt block pavements in the Borough of Manhattan in 1912 cost 9.8 cents per square yard for repairs, and in the Borough of Brooklyn for 1913 1.2 cents per square yard.

**Bitulithic Pavements.**—This pavement was first laid about ten years ago. A gentleman who had formerly been interested is asphalt pavements conceived the idea of improving the then existing methods of laying a macadam pavement by filling a portion of the voids with a bituminous product or bitumen mixed with some other material. By the gradual elaboration of his original idea there was evolved a pavement which is now known as "bitulithic." It is essentially a macadam pavement of selected and graded stone, so that the voids in the stone shall be as small as possible, the binder being a bitumen, either coal tar or asphalt, both having been used. The pavement, being formed of coarse materials, can be laid on quite steep grades with satisfactory results. It has been laid very extensively in this country and would undoubtedly have been used to a greater extent if it were not patented. It is considered as standard and ranks with asphalt pavements.

Sheet asphalt, asphalt block and bitulithic pavements are given the same values, as shown.

The table then is as follows:

| | Per cent. | Granite. | Wood. | Asphalt. | Brick. |
|---|---|---|---|---|---|
| Cheapness | 14 | 8 | 8 | 14 | 11 |
| Durability | 21 | 21 | 16 | 15 | 16 |
| Easiness of cleaning | 15 | 10 | 14 | 14 | 15 |
| Light resistance to traffic | 15 | 13 | 14 | 12 | 15 |
| Non-slipperiness | 7 | 7 | 4 | 5 | 6 |
| Ease of maintenance | 10 | 10 | 8 | 6 | 6 |
| Favorableness to travel | 5 | 2 | 5 | 4 | 3 |
| Sanitariness | 13 | 9 | 13 | 12 | 10 |
| Totals | 100 | 80 | 82 | 82 | 82 |
| Cheapness eliminated | | 72 | 74 | 68 | 71 |

| Heavy traffic. | | | | High-class residential. | | | | Ordinary residential. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gran. | Wood. | Asph. | Brick. | Gran. | Wood. | Asph. | Brick. | Gran. | Wood. | Asph. | Brick. |
| 21 | 16 | 15 | 16 | 10 | 14 | 14 | 15 | Omitting light resistance to traffic. | | | |
| 13 | 14 | 12 | 15 | 7 | 4 | 5 | 6 | | | | |
| 7 | 4 | 5 | 6 | 2 | 5 | 4 | 3 | | | | |
| 10 | 8 | 6 | 6 | 9 | 13 | 12 | 10 | | | | |
| 51 | 42 | 38 | 43 | 28 | 36 | 35 | 34 | 67 | 68 | 70 | 87 |

Knowing, however, the kind of material and the properties thereof are not sufficient for the official whose duty it is to determine the particular one to be used. He should also know the requirements of the streets to be paved. In order to do this he should have records of the kind and character of the traffic upon each street, or upon typical streets. Of course it is not necessary to get a total census of traffic on all residential streets, but of those where by an inspection it can be told to what class they belong.

And in speaking of traffic it should be understood that as at present considered the words "heavy," "medium," and "light" traffic mean very little, except with reference to any one particular city. There should be a standard unit of traffic, so that when the traffic on a certain street is given it could be distinctly comparable with traffic in another city. To do this it is necessary that the effect upon the different materials be known. Little attempt has been made to determine this, but within the last two or three years the English Road Board has constructed a machine for making this determination, and a somewhat similar machine was exhibited at the American Highways Association meeting in Detroit last fall.

It can be easily understood that a vehicle weighing with its load 15 tons will have an entirely different effect upon a pavement than fifteen vehicles each weighing 1 ton. It makes a difference, too, whether the tires are steel or rubber, whether they are 1 inch or 3 inches in width, and whether the vehicle is moving at a rate of 6 or 30 miles an hour. Experiments can be made so that the wear of the different vehicles under different loads can be ascertained and referred to one unit, and until this is done the adjectives "heavy," "medium," and "light" must be considered very indefinite.

The borough engineer of Fulham, London, has established what he thinks is the wear that will take place on wood pavements under a certain traffic, and, having observed the traffic on any particular street, he figures out how long a wood pavement should last. This, however, is indefinite for the reasons before given.

And even after the value of the traffic unit has been established it will be difficult to apply it positively, as in every case the weight of the vehicles upon it must be estimated.

Then, after all that has been determined, there are certain local conditions which must also be taken into consideration. For instance, if the traffic requirements are such that a brick or stone pavement should be used for economic reasons, it is possible that hospitals, school houses or churches may be situated on certain portions of the streets, so that it would be necessary to lay wood on account of its noiseless property. Then, too, the official will learn that the wishes of the users of the street and those doing business on it must also be taken into consideration, and he often finds that the two will conflict, as the truckman cares nothing about the noise and the businessman cares little for tractive or non-slippery properties. So that, despite all information that can be obtained, in order to arrive at a satisfactory result the different conclusions must be treated together and intelligently. If, however, all these matters are taken into consideration, it is seldom that an improper determination will be made.

It might be in order to discuss to a certain extent the economics of the different kinds of pavement. When an original pavement is paid for by assessment upon the abutting property, with repairs and repaving done by the city at large, it often becomes necessary to establish legally just when a street should be repaved. This is more easily determined by inspection in a block pavement than in a sheet pavement, as it can easily be seen when the blocks are worn out, but with a sheet pavement patching can be carried on for a long time and to a great extent without there being any formal repaving. Take for instance the case of an asphalt pavement, and assume for the sake of the illustration that the original pavement is paid for by a bond issue continued during the life of the pavement, which in this case is assumed at 18 years. The