are employed for this purpose, but the methods illustrated above are those most generally used.

Figure 1 illustrates a multi-stage turbine pump with ejector for priming. The ejector is connected to the highest point on the pump casing, and either steam, air or water under pressure may be employed to produce a vacuum.

Figure 2 shows an auxiliary hand pump mounted on top of the discharge casing. When the pump is ready to start, the gate valve on the discharge is closed, and by operating the hand pump a vacuum is produced and water drawn in, filling the suction pipe and casing.

The method of priming shown in figure 3 may be resorted to where a foot valve is used on the suction pipe. Water is allowed to run into the pump until it reaches the discharge flange, when the supply is shut off, and the pump may be started.

After the pump has been properly primed, it should be started before the gate valve on the discharge is opened. When full speed is reached, the discharge gate may be slowly opened, and the pump will perform its work in a proper manner.

DATA REQUIRED FOR ESTIMATES UPON PROPOSED CENTRIFUGAL PUMPING PLANTS.

Our engineers will be pleased to advise fully regarding any proposed pumping equipment. Information concerning the following points should be given in the letter of inquiry.

1. The number of pumps wanted.
2. The capacity of each in gallons per minute.
3. The total head in feet to be pumped against (the suction lift, if any, should be included in this).
4. The type of pump desired—horizontal or vertical.
5. From what source will the water supply be taken?
6. Will the water be clear, muddy or gritty?
7. Length and size of the discharge pipe.
8. Length and size of the suction pipe.
9. State the average suction lift, if variable.
10. Is the service continuous or intermittent?
11. Character of the driving power; if electric state kind of current, voltage, phase, frequency, etc.