# New Publications.

*Foundations and Foundation Walls.* By George T. Powell, Architect and Civil Engineer. New York: Published by Bicknell and Comstock, 27 Warren St.

This is an excellent guide to students, being a practical explanation of the various methods of building foundation walls for all kinds of buildings, with practical illustrations of the method of constructing isolated piers, tables of the weight, materials etc., the kind of materials used, the loads sustained, and the size of walls for piers, etc., use of piles in foundations, mortars, limes and cements, concretes, stuccos, etc., Price $1.50.

*The Steam Engine of the Future.* By JOHN BOURNE, C.E., *Author of 'A Treatise on the Steam Engine,' 'A Catechism of the Steam Engine,' &c.* London: Published by J. BOURNE & Co., 66 Mark Lane. Price: One shilling sterling.

We have here an outline of impending improvements in the steam engine, designed to render that great instrument of civilization far more widely useful, and far more generally accessible, than has been the case in its past history. The Author, who is no novice in such enquiries, is enabled, by tracing the lines of improvement which have been followed in the past, to deduce their position in the future. He shows that whereas thirty years ago small engines were almost unknown, their employment has increased at a prodigious and still accelerating pace; that the tendency in all factories is to displace the great central engine heretofore in use in favour of a number of small engines distributed through the works, and that the rise of the electric light constitutes a new epoch in this progress, seeing that this light must be produced near the point where it is used, and must, therefore, be generated by small engines at a number of local centres. Small engines, he contends, should be of uniform design, to enable them to be manufactured by special tools, like rifles, whereby great accuracy is combined with great cheapness of production. Existing faults of design should be corrected, and the increased cheapness and superior quality thus obtained will enable the steam engine to be employed for domestic purposes, like a docile Afrite, acting as a household drudge. The structure of engine necessary to attain this universal acceptation is explained, and the exposition is well worthy of public attention.

We observe that the species of engine and boiler the author recommends has been adopted for driving Sir Joseph Whitworth & Co.'s new machine and steel works at Manchester.

# Correspondence.

To the Editor of THE SCIENTIFIC CANADIAN:

*Dear Sir,*—Can you inform us, and many other readers of your valuable journal, of a simple rule to compute the horse-power used when that power is rented? We pay so much per horse-power, per day, and that power is supplied to us by a belt of the average thickness and tightness 4½ inches wide; some days we use less and others more, according to the amount of machinery at work, and when we have all on, the belt is almost sure to slip. The driving pulley is 22 inches and the one on our shaft is 16 inches. Your kind answer to this will much oblige

Yours, etc.,

L. & T.

[We wish practical mechanics to answer all such questions through the columns of the *Magazine;* but if not answered, we will give a reply.—EDITOR S. C.]

DISEASE GERMS.—C. Von Nagell, a Bavarian investigator, while he retains the idea that the smallest organisms, fungi, are the cause of all infectious diseases, holds that only these germs are dangerous and calculated to infect which enter our organs of respiration with the air we breathe. If Von Nagell's theory should prove true, and find general acceptance, it would be no longer necessary to trouble ourselves about the generation of products of decay in masses of liquid, as in sewers, canals, damp soil, river and spring waters. On the other side every means must be employed to prevent these fungi diffusing through the air as a result of the drying up of such decaying masses.

## INSPECTION OF PLUMBING.

*(From the Plumber and Sanitary Engineer.)*

The action of the House of Representatives in passing a law appointing an Inspector of Plumbing for the District of Columbia is commendable, in view of the backwardness of other cities, and especially New York, in proposing and carrying through a similar enactment. We presume the efficient health officer of the District, Dr. Townshend, mainly deserves the credit of this step of progress.

An effort was made to amend the bill so that the inspector should be paid by fees collected from persons whose houses were inspected, but we are glad to say it was voted down, and provision will have to be made for payment by a salary. It is very undesirable that any public officer should be tempted to increase his labors in order to multiply his fees. The immediate effect of the fee system would be to make the public suspicious of his disinterestedness.

An official inspector of plumbing should be a man of capacity and of the strictest integrity; fearless in the discharge of his duty, and not dependent for his living upon an uncertainty.

The majority of householders and builders would undoubtedly avoid utilizing his services if they thought they could thereby escape paying a fee. But if the cost of the service was paid out of the public money, no reasonable objection could be made to it.

On the other hand, if an unscrupulous man received the appointment under the fee system he would very naturally be regarded as a "striker," and would prove to be only a burden upon the community. The service to be performed by an official inspector of plumbing is too important to allow any one to abuse the position, and we fear the fee system would surely lead to such a result.

We understand that the Journeymen Plumbers' Mutual Benefit Society are considering the advisability of petitioning the State Legislature to appoint an inspector of plumbing for New York City, and it is high time that a move was made here in this direction.

MR. W. H. BRADLEY, superintendent of the Boston sewers, in a communication to the city government some time ago, said: "The number of drains leaking under houses and into foundation walls is very large; it is almost certain to occur with every house upon made land, and is always neglected by owners and parents till it becomes insupportable, and with sickness traceable to such causes and continual discomfort prevailing, the parties most interested will wait for the city to carry out costly general measures, thinking thus to abate their private nuisances. As a rule a bad smell in a house means something wrong locally, and should be stopped in a day. The examination of house drains made by the Boston Board of Health, which aimed at the discovery of leaks by the use of strong smelling volatile oils, shows that more than one-half of the Boston drains (and the proportion would probably not be less elsewhere) are defective from want of tightness.

NEW UNICYCLE.—A single wheel, wherein is arranged a seat for the traveller who is to propel it, has been invented by Mr. J. Heronemus, of Emdrup, near Copenhagen. The wheel has one central rim, and to this are fixed the arms, which are (say) six or eight in number, half of them swelled, extended, or bellied out to one side, and half of them similarly to the other side, each set of arms being fixed to a nave or boss; these arms are bent out so far and the naves are so far apart that the traveller when in the sitting posture finds room in the wheel between them. The arms are by preference not arranged opposite to one another on the two sides, but intermediately. The naves carry each a crank, and these cranks are by connecting rods jointed to two bell-crank levers having one arm placed about upright in a position convenient to the traveller to take hold of for working them backward and forward alternately. Each bell-crank lever has its fulcrum in the seat for the traveller, which seat is hung from the naves or axles of the wheel. The seat is by preference made in scroll form, of light open worked steel plate or wirework, or partly so, and may have a part extending overhead to carry an awning to protect against dirt thrown up and against rain. From each nave there may be hung a leg serving to steady the velocipede while entering the same, but which can be thrown up out of the way when travelling. The wheel, arms, and the rim may be fitted with stiffeners or diagonals to distribute the weight or strain over the rim as much as possible.