ranged in a make-shift sort of way. He wonders why the work costs so much, and does not see that the men are in each other's way, and have to wait for each other; it suits the men, but does not suit the employer. "If machinery is to be put down, it is necessary to consider its efficient arrangement. I should first consider the door or opening through which the material was to come in from the yard, and from that I should lay my plans, so that the stuff would pass from one machine to another without carrying backwards and forwards, and without getting the work in various states of conversion mixed. I have seen stuff just from the saw, some from the planing-machine, some set out, some not set out, some partly worked, all belonging to various jobs, all mixed up together, tumbled about and trodden under foot, on account of the bad arrangement of the machinery. And then men are expected to finish it off as quickly, and in as good a style, as if it were kept right. A great mistake is to get as much machinery as possible crammed into a small place. If you have not plenty of space you are better without the machinery. If you have not sufficient space for one man to work each machine without in any way inconveniencing another, and sufficient work to keep each man and each machine fully employed, you are better without it. Then, again, the economic use of machinery should be considered; in some workshops, no matter how trifling a thing is required to be done, if it can be done by machinery it must, when perhaps a man could do it by hand in less time than it would take to set the machine, and probably he would be standing idle whilst the work was being done by machine. I once saw as glaring a waste of time as is possible to conceive at a machine shop, where the proprietor boasts of being able to do anything by machinery. He had four large oak gateposts to work, and rather than have them done by hand, he had half a dozen men to get them up into the mill, then stopped a tenouing machine in order to take the slide bed and fit to recessing machine for the purpose of working the posts. Special cutters had to be made, each pair of posts was of different pattern, and when everything was ready it took four or five men to lift the posts about. It occupied two machinists, and kept idle two machines for two days, besides taking the time of three or four labourers; and then it took two joiners a day to finish them, when the whol of the work might have been done by them in three days. With good machinery, well arranged and fully employed, and good men to work it, a practical foreman to control the lot, joinery can be turned out in good shops by good full-priced joiners, in a thoroughly workmanlike manner, as cheaply as any jerry builder can turn it out with bad materials and underpaid pieceworkers. It is not the quantity of machinery which pays, but the choice of machinery, adapted to the requirements of the class of work, and the way in which it is handled; if you have little room, get a general joiner and band-saw. With these to aid the joiners, if there is plenty of space to work them, the work will be done cheaper than if you have every machine invented crammed into an insufficient space. The difference between cost, with or without machinery, is not very much in ordinary builders' work, and it will balance on the wrong side if you have more machinery than you have use for, or if it is not properly handled. If an employer provides clean, comfortable workshops, good work-benches, and other necessary appliances-a sufficiency of everything-and if he has machinery, gets what is adapted to his business, and arranges it properly, with plenty of power and proper speed, he is simply saving 50 per cent on the extra amount of money it cost him in the first instance, beyond what it would cost in fitting up in a makeshift manner. Then he requires to

provide good materials. Joinery made from good timber is cheapest, when material and labour are added together. Deals at £14 per standard, which can be cut up right away without picking, with a certainty of none being unfit for use, are much cheaper than deals at £9 per standard, when it will take £4 worth of time to sort out and cut up a standard to best advantage, and then perhaps have to cast out a lot after it is partly worked, and a lot of time thrown completely away. Good materials save more than their extra cost in labour alone, besides giving credit and satisfaction. I myself have had to use up cheap stuff which, with interest of money added, would cost more than best stuff by the time we could get rid of it, besides giving the employer a name for using bad materials. If an employer provides good shops, appliances, machinery, and materials, he does his share towards cutting down cost, and he has to look to his employés to do their share.

Now about Foremen. Employers who are thoroughly acquainted with the working part of the business are the exception rather than the rule, and do not know when they have a really good foreman or not. First of all, what is the shopforeman's position ? Well, if the master is not practical, or the manager, as is often the case, the shop-foreman is the principal man in the establishment, and should be paid and treated accordingly. In small businesses, where the employer is not practical, the shop-foreman should be manager as well, as far as the work is concerned ; his is the principal part, and requires most thought. A shop-foreman should have the original plans and specifications (tracings and copies only being sent to buildings), so that his work may be before him for some time before it is required ; he then has a chance to be always prepared, and to use up materials to best advantage, and if he is a good man, it is best for him to give drawings and bevels, etc., for roofs for the buildings. If he is trustworthy, it is good policy to let him know the price the work has to be turned out for, and he will then use his best endeavours to economise for his own sake.

In large establishments a manager is usually necessary. I am afraid there are a great many managers about who do not reach my ideal, the tendency being to place surveyors, or surveyors' assistants, as managers. It may be policy in some cases to do so; but I would prefer to employ a manager who had worked his way up from the bench or the trowel. A manager should be up to all the tricks of trade-i.e., he should have had practical experience as workman, shop, and general foreman, so that he may be fully acquainted with the faults and failing of each class. With a good practical manager to give orders and particulars, then devolves upon the shop-foreman the duty of systematically carrying out the work. Without system, all the hurry and push he may have only ends in muddle; time is wasted, and it is a matter of impossibility to obtain the exact cost of anything. It depends on the foreman whether there is system or only a makeshift. I can give, as an instance, a shop at the present time in which cheapness is considered the most essential point. In addition to the foreman, who simply superintends, a man is employed to set out rods. So far so good ; but, in order to save time in setting out, he puts three or four jobs on one rod. A joiner requiring work to go on with, does not ask the foreman or the man who sets out the rods; but his stuff and job are given to him by the cutter-out, who perhaps knows nothing about the rod or what the work is. The stuff is given to the joiner a little at a time. He has no list of it, no rod, and knows nothing about it until he can find a number on the stuff. That is his first thread. He then has to wait until he can see a labourer to look about the shop for the rod, which perhaps