TO THE

EDITORS OF THE

NEW YORK COMMERCIAL ADVERTISER.

A communication in your Journal of the 7th inst., ("*Water Commissioners vs. Common Council,*") requires a passing notice, so far as it relates to the respective merits of castings made at blast furnaces from the ore, and those made of re-melted iron. The committee of the American Institute, whose names are appended, declare that, in reference to this subject, "their conclusions are the result of *their own practical knowledge*, confirmed by the evidence adduced," and they say, "that *all the experience of founders in the United States*, has shown that by a proper selection of pig iron a greater strength may be given by re-melting; and, moreover, it is well known, that while the working of a blast furnace is so capricious that no uniformity of quality can be depended upon, a good founder can obtain from the cupola with certainty such variety of cast iron as the particular purpose to which it is to be applied demands." Again: "The testimony of every practical man examined before the committee has been in favour of re-melted iron, both for castings of stop-cocks and also for water pipes." The committee conclude by advising the body which has charge of that important trust, the introduction of water into the city, "to act upon the practical experience of our own country deduced almost daily from the construction of steam cylinders,

hydraulic presses, &c., and about which there is little or no difference of opinion among practical founders, who give the preference to iron carefully selected and re-melted in cupola furnaces."

Is it not rather loose phraseology to say, that "all the experience in the United States" has sanctioned the conclusions of the committee? Is all the wisdom and experience in the United States to be found in the city of New York? who did the committee consult in Philadelphia? who in Baltimore? who in Pittsburgh? In the last named city there is probably three times as much iron melted as in New York. But on a question in which the owners of furnaces making iron from the ore, and the owners of cupolas whose business it is to re-melt iron, are directly opposed in interest, was it *philosophical* in a scientific body to derive all their experience from one of the parties only? All founders, and the practical men connected with them, are directly and deeply interested in the position that castings should be made of re-melted iron; *they* can only make them in that way. In regard to the processes of the cupolas, one thing at least is well known; they use nearly all the bad iron in the market. In founder's language, "obtaining such variety of cast iron as the particular purpose demands," means, using so much good iron as may be necessary to bring the mass of bad to the degree of strength required. The skill of good founders is shown in their successfully hitting this point—the nicest in the *economy* of their establishments. When they succeed, all very well. Can the committee, however, advise the corporation of New York to receive cast iron pipes, &c., even from a cupola, without subjecting them to a rigid inspection, due proof by the hydraulic press, and a trial of the

quality of the iron? Does not the question become one of determining what are good pipes after they are made, and not of prescribing how or *by whom* they shall be made? A good judge of pipes and a good press must settle this question upon actual trial and proof. Will any practical man, even a founder, assert that the quality of a cast iron pipe, both as to the strength and texture of iron, cannot be ascertained better after it is made than before? Can a founder obtain good iron from his cupola unless he puts good iron in; and what security does he give for the "proper selection of pig iron?"

The committee aver, "that the working of a blast furnace is so capricious that no uniformity of quality can be depended upon"—and this is stated upon the authority of Common Fame, a lady whose testimony should have been admitted with some caution in a scientific report. In this instance she has misled the gentlemen of the Institute. Founders should know that the great variety of bad iron which they purchase, is not the result of capricious working, so much as bad ore and bad management. A furnace like a cupola may be badly managed, and good material spoiled. A well managed furnace will work well, and produce uniform results from five-sixths to nine-tenths of her time. Furnaces often sell nearly their whole product for years in succession as the first quality of pig iron. Many do not make five per cent. of bad iron. There is, perhaps, no furnace which in a thousand tons of iron ever yielded such a variety as comes from every cupola. If uniformity be the point aimed at, it can only be obtained at a blast furnace using the same ore.

Founders cannot always obtain the same iron; they never could if the working of furnaces were as capri-

cious as alleged. At those furnaces where castings are made, when any thing goes wrong and the iron becomes bad, it is at once run off into pigs, and sold at a reduced price to founders, and the castings are kept uniform. When the founders, by mistake or mismanagement run off bad iron unexpectedly, what do they make of it?

In concluding, the committee strongly recommend acting upon the *practical experience of our own country, deduced almost daily from the construction* of *steam cylinders, hydraulic presses, &c.* If "all *the experience of the United States*" referred to by the committee, and brought to aid their conclusions, were deduced in this way, they have been most unhappy in their deductions from experience. Blast furnaces in this country are generally of necessity in remote and secluded situations, not convenient to the haunts of business; they make, with a few recent exceptions, from three to six tons of iron a day, and of this quantity they can seldom use more than one third, and never more than a half at once, being compelled to empty their hearths when full, and they only hold from one to three tons. A blast furnace can never, therefore, undertake any casting requiring more than one hearth full, or, as the furnace men say, one lading. What sort of experience is that which is deduced from their not making castings over that weight? Furnaces make no arrangement to furnish occasional castings, and are only willing to undertake an order which requires a large quantity of articles of the same kind. If the committee will find the order, the furnaces shall be found to execute it for any quantity of castings exceeding in all two hundred tons, of steam cylinders, hydraulic presses, or any other arti-

cles of which each piece shall not weigh over two tons. The quality shall be equal, if not better, than those *usually* furnished by the founders of New York, and at twenty per cent. less price. To make occasional castings requires a great variety of fixtures, and a great variety of patterns, neither of which does it suit the owners of blast furnaces to keep, the more especially as they are so much out of the way of receiving such orders. Foundry men can procure suitable workmen at a short notice, to execute any required pattern, or to make any required arrangement in their establishments, to fill any order, however new or unusual. At a blast furnace all the workmen are resident, and it is not economical to keep workmen waiting for every possible contingent order. It is found to be more wise to arrange the establishment for a particular kind of work and adhere to that; and as the workmen and all concerned become skilled in the business, it is finally conducted with greater economy and advantage. This is believed to be the settled experience of all the blast furnaces in the United States at which castings are made.

The individual who now addresses you has for more than fifty years been largely engaged in the manufacture of iron from the ore. For some five years of that period he was also proprietor of a large foundry, at which were cast, among other things for the Government of the United States 120 long 32, and 120 long 24 pound cannon from re-melted iron. Having, therefore, had some experience as a founder also, he does not hesitate, with due deference to the superior pretensions of the committee of the Institute, to give it as his opinion, that iron is never strengthened by remelting—closer it may be made, but not stronger. If

the same iron be subjected to the process of re-melting, after not many repetitions its texture will be destroyed, and it will become utterly worthless. The change may not be readily perceptible the first time, but it is not the less true, that every melting lessens its strength. The quality may be improved for some purposes, where strength is not the first requisite.

This opinion is the result of his practical knowledge; its correctness is easily susceptible of actual proof: let it be put to that test. Order a ton of iron from a furnace, cast into pigs, two inches square, and thirty-six inches long; try their strength, re-melt them in a cupola, cast them into the same moulds, try their strength again, and so repeat the operation, marking accurately the results. A few re-meltings will satisfy all disinterested inquirers, whether scientific or not, as to the benefits of re-melting iron. The committee will indulge him in offering them another item of his *experience,* not included in their "*all.*"

Before the year 1808, no large quantity of cast iron pipes had been made in the United States: in that year he furnished the city of Baltimore with a considerable quantity. He had no farther orders until the year 1818, and believes that few, if any, were made in the United States in that interval. In the latter year the authorities of Philadelphia determined to replace their wooden by cast iron pipes, and issued proposals to that effect. The writer is impressed with the belief, that no one but himself responded to these proposals. The city required two sizes, for their main, 22 inch and 20 inch pipe. Not being able to furnish both sizes in the time prescribed, he offered only to make the 20 inch pipe. His offer was accepted, and for that occasion the 22 inch were imported from England. From that time to the present, more than 20 years, he has continued to furnish that City with pipes of various sizes, and castings for stop-cocks, and occasionally, for other machinery connected with the Water-works, almost every year. Of 62 miles of pipe laid down in Philadelphia, he furnished upwards of 50 miles, or 29,407 pipes. All obtained from other contractors were, as he believes, made from the ore, except those imported: how they were made he does not know. These pipes were all purchased for the city, and laid down under the superintendence of Fred'k Graff, Esq., whose faithfulness as an officer, and skill as an engineer in his department, will not suffer in comparison with that of any other man. His science and experience of more than 30 years, has contributed not a little to the success of nearly all the Water-works in the United States. He has never required pipes of re-melted iron, and he has never, in 20 years' trial, found any failure or deficiency, in pipes made directly from the ore. The founders in Philadelphia have never set up the doctrine that water pipes must be made of re-melted iron. It was reserved for those in New York to make that discovery; and it was reserved for a committee of the American Institute to discover, that "all the experience of the United States" went to confirm that doctrine.

Having ascertained that the pipes and castings made for the Philadelphia Water-works fully answered the purpose under a pressure of water greater than was generally required, he commenced the manufacture on a more extended scale, using nearly all the iron at two furnaces, and occasionally some from a third, for that purpose. Nearly about the same time

three near relatives became owners of two furnaces in the same neighbourhood, and engaged in the same business. These four establishments within a circuit of 25 miles, in New Jersey, have been almost exclusively employed in making cast iron pipes, branches, stop-cocks, and other castings for water and gas works. As all those thus concerned unite in what is said in the remainder of this communication, (approving also what has already been said) we shall speak hereafter, in behalf of all.

We have furnished these articles, made from the ore, in large quantities to corporations at Boston, Troy, Albany, Hudson, Poughkeepsie, New York, Trenton, Spring Garden, Northern Liberties, of Philadelphia, Kensington, Southwark, Moyamensing, Reading, Easton, Bethlehem, Allentown, Nazareth, Lewistown, Westchester, Wilmington, Lynchburg, Richmond, New Orleans, Mobile, and Havannah. For more than 20 years, we have continued, with little exception, to furnish them every year to the authorities and corporations of Philadelphia, and its vicinity; and, so well are they satisfied, that their orders are continued to this day. There is, probably, among these, 100 miles of our pipe, and we are yet to be informed of any deficiency in the manufacture. There are in the United States, not less, probably, than 800 miles of our pipes, large and small, in use, and no complaint has ever been made of want of strength, though many have been tried for 15 or 20 years. We do not pretend that our castings have been perfect, and we never desired them to be put under ground until they were tried; we have lost some in these trials, and of this we never complained; we believe that no cupolas have turned out as much iron, which

has more fully answered the purpose designed; we have never heard of any accident happening to any of the many water or gas works we have supplied, through any defect in our pipes. A large quantity were furnished the Manhattan water company, and these have long lain in the streets of New York. Other persons, too, have made and sold pipes cast from the ore, in Maryland, New Jersey, and Pennsylvania; these have been tried, both above and under ground, and found good. We believe there is no risk in saying, that for every pipe cast from re-melted iron, and placed under ground in the United States, there have been one hundred cast at furnaces from the ore, and probably two hundred. What must be said of a scientific report, which in ignorance or defiance of such facts, advises and strongly recommends, that in the works for the introduction of the water into your city, the body which has charge of that important trust, act upon the practical experience of our own country "by preferring pipes and stop cocks of re-melted iron?"

Moliere, in his L'Amour Medicin, has furnished the true key and reply to such Reports: "*Tous ces conseils sont admirables, assurement; mais je les trouve un peu intéressés, et trouve que vous me conseilles fort bien pour vous. Vous êtes orfevre monsieur Josse; et votre conseil sent son homme qui a Envie de se defaire, de sa marchandise.*" There is a respectable firm of founders in New York, one member of which is one of the water commissioners; is there one or more of the same firm on the Committee of the American Institute?

Having nearly all our property invested in this business must be our apology for this notice of a Report,

which, considering the source from which it emanates, is calculated to do us serious injury. We verily believe it to be founded in mistake, to say the least, and that the attempt to drive your city to an additional expense of 20 per cent. for pipes made of re-melted iron, has originated in interested motives in some, and for want of proper knowledge in others. It is true our opinions are subject to deductions for our interest in the question; but we have in our favour the experience of the United States, in the proportion of one hundred to one, in the very article about which the dispute has arisen.

But we must not close this communication, without rendering justice, so far as in our power, to that committee of the Councils of New York which has charge of the purchase of pipes, &c., for the distribution of water in your city. Less than a year since, we found that committee, and Mr. Norris, the Aqueduct Commissioner, fully imbued with the idea of the superior quality of re-melted iron: we laboured to remove that notion, not so much with the expectation of furnishing pipes to the city, as to prevent the settled adoption of a principle, which, by extending its influence, might do us important injury. In all our interviews and communications on this subject, chiefly held with Mr. Cooper and Mr. Norris, we never observed aught in them but a strong desire to act for the true interests of the city; and it was only after exhibiting the facts, above referred to, and many others of the same kind, that they ordered pipes from us, on the score of their being at least as good, and nearly 20 per cent. cheaper; and this they did, knowing that we were firm political opponents. The four furnaces from which we have sent pipes to New

York furnished, probably, 200 votes to the Whig party, at the recent election in New Jersey, but without any kind of control or improper influence on our part.

But these gentlemen did not appear to yield their prejudices in favour of re-melted iron, until they saw a letter from Major Wade, dated Stockholm, Sweden, whither he had gone with others on a mission from the Government of the United States, to examine the cannon foundries there, in reference to improvements in that manufacture at home. In that letter Major Wade informs his friend, as we are told, that at the principal manufactory in Sweden, where cannon were cast for four or five of the European powers, it has been settled by actual experiment, that cannon cast at the furnace from the ore were stronger than those from re-melted iron. By uniting several furnaces in one building the necessary quantity of iron was secured for the largest sizes, and that mode of manufacture exclusively prevailed at an establishment reputed to make the best ordnance in Europe.

Further, we authorized Mr. Norris to offer any of the founders in New York or elsewhere, to submit a few hundred of their pipes, and the same number of ours, then on hand, to a special trial in the presence of scientific and practical men, in such a way as would test their utmost strength, not only by the press, but by the sledge hammer, dropping from a height, the steady pressure of a weight, or any other way which might most effectually exhibit their comparative merits.

S. R.
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The names of the persons making the above communication, can be learned on application to the editors of the Commercial Advertiser.

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