5 tons per square inch in tension or $4\frac{3}{4}$ tons in shear—while in
some of the Australian bridges the bottom chords are exposed con-
tinually to 7 tons per square inch in tension, and the rivets to the
same in shear. Finally, in English bridges, or bridges designed locally by
English engineers I have frequently found gross errors, arguing either great
carelessness or lamentable ignorance. Some of these errors were even so
serious that when pointed out they led to the alteration or condemnation of
the structure. Some of them are referred to in the pamphlet I forward.
Others will be found mentioned in the engineering journals (in Engineer-
ing 6th June, 1884, 10th October, 1884, and Engineer 5th June, 1885).
Though I have looked through very many published plates of American
Bridges, I have never found any such errors as those referred to, but, on the
contrary, have been uniformly struck with the intelligence and skill dis-
played by the designer.

Yours, &c.,

W. C. KERNOT, M.A.,
Professor of Engineering.

University of Melbourne, 2nd December, 1885.

(Febuary 1st, 1886.)

Sir,—The following, taken from a late number of the Engineering
News, of New York, may not be out of place after the very interesting,
but rather heated, discussion, on the relative merits of the British and
American systems of bridge building which has lately attracted the atten-
tion of your readers:—

AMERICAN BRIDGES IN ENGLISH COLONIES.

The last number of The Engineer (London) contains the following:—"A
English engineer, well known in railway circles, says that 'American bridge
builders are, for bridges of all ordinary sizes, completely cutting the English
builders out of the market for Canada and other colonies, and that this is
chiefly due to the baneful effects of the Board of Trade rules, which, instead of
improving, have caused the depreciation of our bridges, by the use of the
common materials which will stand only four or five tons tensile or compressive
strains."

It is possible that our contemporary has just learned that our bridge building
firms are cutting English builders out of colonial markets not only for bridges
of all "ordinary sizes" but many of extraordinary sizes. They have only
themselves to thank for their Board of Trade rules. The past great cheapness
of their raw material has enabled them to substitute weight of metal for the
scientific adaptation of sizes and shapes in use with us; for a long time their
products found sale under the name of British solidity of construction. But now
that pig-iron, Bessemer rails, and refined iron in bars are only $4 to $5 per ton,
and common iron only $5 to $6 cheaper in England than here, and they are
met with such statements as those lately made by Baker, that members of some
English bridges would require strengthening to the amount of 60 to 160 per
cent. before being up to American standards, there is no doubt about the cutting
of their trade.