

that there is a considerable difference in the sp. gr. of the two medals, the small one fairly agreeing with that of an $\frac{11}{12}$ th Au - $\frac{1}{12}$ th Ag alloy, but the large one being distinctly under the standard. They could then offer any explanation they thought proper, and we could test its validity further.

The above facts are interesting, I thought you would like to know them, as your recollection of the effects of Ag & Au on gold were reversed.

Yours faithfully
J. E. Reynolds

J. E. Reynolds.

Burleigh House,
Burlington Road,
Dublin.

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July 9th 1900

Dear Fitzgerald,

Since I saw you today I happened to find an analysis of a sample of Au - Ag alloy by Church. This contained Au - 90.055 & Ag - 9.945 by

direct estimation, on a 10% alloy. Its specific gravity was 17.6.

Now an $\frac{11}{12}$ th Au - Ag alloy should contain only 8.34% of Ag, or 1.66% less Ag than the above.

Assuming that the sp. gr. falls regularly from 19.3 to 17.6 as the percentage of Ag increases, the sp. gr. of the $\frac{11}{12}$ th Au - Ag should be about 17.9. Our value for the

Smaller, or 1895, gold medal
was 18.01.

Save the freight in concluding
that the smaller of the two
medals is fairly within the
limit of contract, tho' under the
theoretical sp. gr.

On the other hand the large,
or 1899, medal, if Au-Ag
alloy (only as specified in
Johnson's letter), is seriously
deficient in gold, as its
sp. gr. was 17.01.

While the effect of silver on
gold is little greater than
that of an indifferent diluent,
as indicated above, copper
appears to form a feeble

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compound with the precious
metal, and this evidently
occupies a greater volume
than the mere mixture..

The $\frac{11}{12}$ th coin alloy, where
 $\frac{1}{12}$ th is wholly copper has,
I find, a sp. gr. of practically
17.2.

If, however, Cu was used
instead of Ag, as the alloy in
the large medal material,
the colour of the latter should
certainly be rather deeper than
that of the small medal; where
you will easily note that it
is sensibly lighter.

The proper course obviously
is to point out to Messrs. D Ho