

7

In reply to your enquiries as to what works have been carried out & are now in progress, I will proceed to notice them in the order in which they were commenced.

1. The Foundry, & the manufacture of iron from the

Vol: 323

Nº : 2

Año: 1857

Memoria escrita por W.K. Whitehead sobre trabajos del Arsenal.

Foj: 9

Sección: historia

Accordingly after making the necessary arrangements, a powerful crane of the most approved form was made, and a capacious foundry erected, provided with every convenience for casting both iron & brass - on a large scale - In this simple recital, those conversant with the subject will know, is included the organization of engineers', smiths' & patternmakers' shops. As with all the miscellaneous tools necessary

11

1

In reply to your enquiries as to what works have been carried out & are now in progress, I will proceed to notice them in the order in which they were commenced.

1. The Foundry, & the manufacture of iron from the ores of the mines in the country, -
Circumstances rendered it advisable to commence the construction of a foundry for the casting of cannon & the various articles necessary for the building & equipment of steamers, before making an essay to ^{take advantage of} use the ores of the various mines discovered in the country. Accordingly ~~after making the necessary tools,~~ a powerful crane of the most approved form was made, and a capacious foundry erected - provided with every convenience for casting both iron & brass - on a large scale. In this simple recital, those conversant with the subject will know, is included the organization of engineers', smiths' & patternmakers' shops, ~~also~~ with all the miscellaneous tools necessary

M. G. S.

to their efficiency. - Thus armed the Establishment
 of Prosser has known how to answer to all the demands
 made upon it - from 24 pounder guns to the most trivial brass
 hinges for steam boat work, ^{so that} in the short space of time which
 this foundry has been at work ~~patterns~~ ~~other is~~ ~~wood~~
~~so~~ ~~well~~ have been made ~~of~~ ~~iron~~ ~~and~~ ~~brass~~ ~~and~~ ~~metal~~ cast



Not in spite of this constant demand on ~~its~~ ^{the} attention, has
 of its Directors, ^{the development of} have the natural resources of the country,
 - which lie in such profusion around the Establishment - been
 neglected. The ores of various kinds & the relative value
 of the fluxes, have been fully tested in the Blast
 furnace, with the most satisfactory results. The iron
 thus produced has been employed in various public works & has proved
~~it~~ of the best quality, ~~and the production has only been~~
 limited in quantity by the deficiency of power
 Unfortunately ^{for some time past} & no other ~~iron~~ ^{iron has been} used for the public
 works. Unfortunately the stream which supplies the
 motive power for the Blast furnace is ~~deficient~~ not
 sufficient for constant work, & this has been the
 only limit to the quantity produced. This want however
 will be shortly remedied by the application of

steam power, the ~~operation~~ ^{certainty} of which is so highly advantageous to operations on a large scale in iron making.

Iron smelted with charcoal is ~~as good as~~ ^{is well} known. Much stronger & better than iron smelted with coal & in Europe is dearer. There is every reason to hope, from the abundance of the ^{raw} materials, ^{which she possesses} that Paraguay will in a few years be able to supply La Plata with ^{the best} charcoal iron at a cheaper rate than is now paid for an ^{inferior} quality imported from Europe.



~~Pier for the Port of Asuncion.~~

2° Construction of Steamers in the Port of Asuncion.

Of the ^{indirect absolute necessity} importance of steam communication on ~~such~~ rivers of such magnitude as the Paraguay & its ^{con-}fluents, it would be useless ^{here} to dilate. Unfortunately

though these principles had been long acknowledged,

nothing had been done efficiently to supply the want.

^{until} & the honour was reserved to the Gov. of Paraguay themselves to take the matter in hand, and demonstrated the possibility of ^{performing} ~~reducing~~ the voyage from Buenos Ayres to

Assumption in a week, ~~or in less than half~~ the time in which
 it had been previously accomplished. To procure ^{suitable} steamers
 from Europe ~~to carry out such a scheme in its integrity~~ would have been both ~~expensive~~
 costly & uncertain from the great distance ~~intervening~~, &
 the Gov^t ^{therefore} wisely determined to erect ~~the works of~~ construct
 for themselves = availing themselves of the enduring timber of
 the country, & bestowing ~~the details of the~~ &
 workmanship, ^{rarely} ~~only~~ to be found in a Gov^t ~~of~~ ^{the} ~~country~~
 shipyards of private individuals.



But a ^{complete} shipbuilding establishment with its ^{officer} slips, sheds,
 stores, steam apparatus for bending the planks, and a
 multifarious list of ^{details} accessories, which make no show on paper,
 is not to be improvised in a week. Large quantities of timber
 of other materials had to be procured & prepared, earth
 excavated for the slips, workmen organized &c. so that it is
 not astonishing that the first steamer was not launched until
 18 months after commencing operations at the establishment.
 It is sufficient to add that at the present time, only 6 mo.
 later, there are two more steamers nearly ready to launch
 instead of one. The first steamer, the "Ypora," has already
 secured for herself a good reputation, and it may be

5

assumed without fear of contradiction that the ~~second~~
~~following~~ ^{successing} vessels will ~~exceed~~ ^{surpass} rather than fall short
of the high standard ~~reached~~ ^{attained} by the first -

Engineering Workshops of the ~~Asesual~~

The fitting out of the new steamers, ~~the~~ repair of the
existing ones, naturally demanded all the conveniences
& ~~appliances~~ ^{appliances} of an Engineer's Workshop (Ateliers de Construction)
and with this view, tools & Machinery of the
most improved description had been procured
from Europe. Unfortunately, the Agency of the
Public Works did not permit of Workshops of a
being at once ^{built} ~~undertaken~~ on a scale commensurate
with the shipbuilding department, & consequently
a temporary ^{Asesual} ~~shelter~~ was organized in a military
barrack, which has fulfilled all the purposes for
which it was intended, and has given occasion to
several Paraguayan youths to show their ~~own~~ ^{own} talent
for mechanical engineering. The vast quantity of


metal work necessary ⁱⁿ the building & equipment of
~~expensive class~~ ^{of the best class,} steamers, has been entirely supplied
 from this establishment, aided by the foundry
 department at the ~~Mexico~~ ^{Mexico}.

The same steam engine which supplies the motive power
 to these workshops, serves to drive two circular sawing
 machines, which have been exceedingly useful in
 the ~~steam boat~~ construction of the steam vessels.



Pier -

Although the Port of Asuncion is highly favoured
 by nature, it was not to be expected that it would
 afford facilities for shipping marine boilers of 12 tons
 weight with safety, & accordingly it was determined
 to construct a pier ~~capable of~~ for that ~~purpose~~ ^{purpose}.
 Some difficulty was felt at the outset in ~~fixing~~ ^{deciding on} the
 level of the pier ~~on account of the great rise & fall of~~
 the river, as what would be ~~highly~~ ^{most convenient} ~~the best average~~
~~height~~ in one state of the river would be useless at
 other times. ^{owing to the great rise & fall of the river} when it had risen or fallen. This

apparent difficulty ~~has~~ has been overcome by
 making the pier double, so that it will consist
 of an upper & a lower pier, so that it will be
 always available, whatever may be the state of the
 river. The ^{pier} has been carried out sufficiently far
 to admit of the largest vessels ~~passing~~ alongside
 when the river is at its lowest.  the greatest care
 has been taken that every pile should reach
 the rock foundation. At the extremity, where the
 great length of the piles would not admit of their
 being safely driven in the ordinary way, advantage
 has been taken of the recently discovered method
 of screwing the piles into the ^{ground} bed of the river.
 The foot of the pile is armed with a cast iron screw,
 which may be compared to an immense auger,
 & the pile is gradually screwed into the bed of
 the river by a very powerful lever purchase,
 directed by the tug-boats of the Works, expressly for

What your paper.

If it be true (as has been observed) that ^{only} those who have already done something, are ~~alone~~ entitled to talk of what they are going to do, it ~~may~~ ^{will} be ^{is} permitted to allude to the progress which has been made with the Works of the ~~new~~ ^{new} Arsenal which are in a forward state.



The most prominent feature of the Arsenal will be a spacious erecting shop 180 feet long with wings for machine shops on either side. Forming a rectangle with these are the Saw Mill & Smiths shop, and a large Carpenters shop in which circular saws & other ^{similar} labour saving machines will be applied to economize time & labour. Preparations have also been made for a foundry - All these buildings will communicate with each other & with the river by railways, for the conveyance of heavy machinery, timber &c. The solidity required for

the foundations & building generally of this magnitude do not admit of their being hurriedly executed, but the progress already made with the most difficult portions gives reason to believe that the end of the year will see the ~~work~~ of these ~~crucial~~ ~~concluded~~ completed.



M. W. Whittell.
Asuncion 7 Jan^y. 1857.

Thurs. 8th Jan^y. 1857. Gave a fair copy of above Report to Gen. F. S. Lopez, who read it over & approved of it. M. W.

14