

WASC 501



On Her Majesty's Service

WASC 501

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ILN 13-2-1875

Commentary on
Guncotton

COTTON-GUNPOWDER.

Amongst the most notable of modern advances in science and manufactures is the progress made in explosives. For more than three hundred years gunpowder had whole fields of useful and destructive work entirely to itself—the quarryman and miner depended on it as much as the soldier, the civil as much as the military engineer. Rilled small-arms and rilled cannon soon caused great changes even in gunpowder; and the shooting-powder of this day is very far superior to that compound of "villainous saltpetre" with which our troops in the past century won those battles, the memory of which is treasured amongst the glories of England. But the modern miner, the modern quarry-owner, and the modern engineer are no longer content with common gunpowder, when the chemists of the age offer explosives far stronger and more effective, with far greater safety, than the "old black lady," as the sportsmen jocosely call it, who fire with smokeless Schultz's sawdust or Reeve's felt.

For practical commercial operations two classes of modern explosives have survived all others—gun-cotton and nitro-glycerine. Both these, in their absolute form, have been productive of grave disasters. The treacherous nature of nitro-glycerine was, some years ago, controlled by its admixture with fine siliceous earth; and a large trade has sprung up in the compound dynamite. Gun-cotton has struggled on, through good repute and evil repute, and has been kept from mischief by storing it, transporting it, and using it wet. In regard to explosives, however, the maxim of Cromwell to his troops, to trust in Providence and keep their powder dry, seems, in spite of cautious ways, to be natural and right. Dynamite cannot be kept dry, because the fluid nitro-glycerine makes the mass oily and plastic; and it cannot be stored under water, because the nitro-glycerine, being heavier than water, would ooze away from the siliceous earth, and such oozings would re-constitute, if permitted, the original source of danger.

A real scientific advance appears to have been made by Mr. S. J. Mackie and his colleagues of the Patent Cotton Gunpowder Works at Faversham, where, on the 3rd inst., a series of most interesting and astonishing demonstrations were made of the new powder these works are turning out for those mining and other purposes in which the sudden evolution of enormous power is required. This manufacture of gun-cotton into a veritable gunpowder by mixing and incorporating it with other oxidising substances is thoroughly corrective of every possible chemical change and even any deficiency of manufacture. Its properties in this condition have been most searchingly investigated by the Professor of Chemistry to the Pharmaceutical Society, Dr. Atfield, on behalf of the railway companies, with respect to which, after having had every detail confided to him, he expresses unhesitatingly his opinion that it is less liable to any spontaneous decomposition than even ordinary gunpowder. Upon this high testimonial and the results of searching investigations carried out in connection therewith some months ago, the Railway Clearing-House admitted the new cotton gunpowder to freedom of transport over all the British railways upon the same terms as common gunpowder—a permission not accorded to any other explosive whatever.

The experiments which took place last week were, in great measure, repetitions of former private trials, and were the first public demonstration the company have made of their cotton blasting-powder. The object was to show the safety and the power of the explosive. The operations were therefore divided into two series indicative of safety and power.

The proceedings began with an exposition of the manufacture of the whole party—upwards of a hundred persons—being taken through the factory without the least reserve whilst all the processes were in full operation. The confidence of the staff and workpeople was fully shared by the visitors, and indeed, the absolute security attained in the works was so abundantly evident as to need no pointing out. The main feature in the manufacture is the complete pulverisation of the gun-cotton by powerful steel mills into an impalpable dust, whereby the thorough washing of that material, and its most intimate incorporation with the chemical substances which are added to form the cotton gunpowder, are attained in a manner never before approached. It is this purity of the gun-cotton, and the peculiar qualities of the oxidising substances added to it, that give to the new powder its excellent qualities, rendering it stable and certain in every climate and under all circumstances. The air-washing of the gun-cotton, which has proved such an efficient means of cleansing it, was also a most interesting operation. A ton of the pulverised gun-cotton is put at a time into a huge vat of water, and kept constantly in ebullition by air blasts driven through it.

After inspecting the factory, the party went out to the open marsh where the materials for the trials had been duly prepared. The powder, in the form of a dry white dust, is packed in brown paper cases, with an inner tube to receive and protect the detonator, by the firing of which the charge is to be exploded. These cartridges when set fire to merely burn with a strong flame; and after several had been burnt and others exploded, the superintendent cut one in halves, and lighting one half with a tusee, held it in his fingers whilst the chemist of the works exploded the other half with a detonator on the ground immediately in front of the spectators. Then two 40 lb. barrels were placed on bonfires, and after the lapse of five and ten minutes respectively, the contents ignited and each barrel vented forth a dense yellow

programme was carried out by the company's able staff, Mr. Faure, Mr. Trench, and Mr. W. Mackie; whilst the care taken of the spectators by the superintendent also merits praise, for the exactitude with which they were brought up to the nearest points of view and yet kept out of danger from flying splinters and fragments.

FINE ARTS.

THE DUDLEY GALLERY.

The Spring Exhibition of Water-Colour Drawings at this gallery maintains the level of former years, although there is perhaps a greater deficiency of figure subjects. The mass of the collection consists either of the works of students who have yet to make their mark, but some of whom will probably be draughted off by-and-by into one of the societies in Pall-mall, or of the works of elder artists, whose chance of progress and consequent promotion yearly diminish, and some of whom practise art in semi-amateur fashion. In this, the bulk of the exhibition, there is much and varied evidence of capacity up to a certain point, and of love of nature. But, on the other hand, the art is of limited aim and untrained character, particularly in the higher departments, such as draughtsmanship of the human figure and composition. Artistic education and the prospects of our school do not keep pace, apparently, with the taste for art which is not only spreading rapidly, but ascending also, as proved by the number of small, low-priced drawings which constitute the staple of this exhibition. Contributions of the classes to which we refer are generally too little representative to demand and too numerous to admit of detailed notice.

But there is still a third category of drawings, which serve to leaven and lend importance to the collection. We allude to the contributions of artists of established reputation, chiefly oil-painters, who send here their occasional productions in water colours. Prominent among these on the present occasion is Mr. Poynter, by whom there is a small but beautiful composition (311) representing Venus, wounded in the chase, seeking the aid of Esculapius. The scene is the garden-court of a Doric palace or temple, with ancient emblems of the healing art over the portal; a plashing fountain in the centre, embowered with vines, solemn cedars, and cypresses. Here, seated on a throne, the god of medicine and surgery prescribes for the bramble-pricked foot of the goddess of beauty, who is attended by three Graces. True classic fancy and feeling pervade this admirable design; and the accessories are most appropriate; even the nimbus which surrounds the head of each deity has classical warranty, and the nude figures (though one might object to the types chosen) afford the opportunity for a display of excellent drawing and modelling. Mr. Poynter is less successful in some home landscape studies. Of the small portraits which this artist has formerly exhibited, there is no sample from his own pencil, but he has obviously set a fashion in this gallery. From among the works of several followers we should specially commend, as worthy of Mr. Poynter himself, a portrait of a lady (512), with a background of blue china, unsurpassed for grace of character and refinement of execution, by Miss Edith Martineau—the same rising lady-artist whose study of a classic head in profile we engraved last year. Very similar, alike in size, delicate perception of character, quiet harmony of colour, and subordination of background ornaments seldom introduced, because too apt to "come forward," are the child portraits by Mr. J. C. Moore. The little musician, "Winifred Holiday" (198), tuning her violin, is particularly charming; and equally meritorious in its way is the prettily set of Sir Norman Snow (183), seated in a chair, pretending to hold a coachman's whip and reins. The life-size bust portraits by Mr. E. Clifford are at least equal in power; "The Lady Ida Bennett" (189) has, too, a graceful expressiveness which recalls Sir Joshua Reynolds.

As few other works group so naturally as the preceding, and complete classification would be impossible, we shall now follow the order of the drawings on the walls, diverging only in order to include the contributions of a given artist. But we have space only to notice the more prominent works, and in most cases bare mention must suffice. No. 11, "Deserted," an old feudal castle, appropriate in sentiment, by Harry G. Smith. "A Winter Sunset on the Tiber" (20), by C. R. Aston; this and No. 58 seem to us to mark an advance. "Courtyard of a Palace, Venice" (29), by T. R. Macquoid. "Old Shoreham" (30), by C. E. Holloway. "From the Campanile of Torcello" (31), an extensive view, embracing the heads of the lagoon, with Venice in the extreme distance—a drawing full of promise in its painstaking beauty, by H. Darvall. "Wargrave Church" (44), a study of a Gothic church, with a close and careful observation, by F. G. Cotman. No. 59, a spring landscape, by Frank Walton. "The course of true love never did run smooth" (51), by John Scott, one of the few figure subjects here treated with fair ability. "Silk Winding on the Lake of Como" (59), by C. Earle. "San Pietro, Venice" (67), and others by H. Pilleau. "Bosimsey Home, Cornwall" (69), by J. L. Rogee. "The Dead and Living" (79), an autumnal landscape, with a faded elm lying in a shallow pool, effectively painted by A. Parsons. "In Florence" (80), with, in the background, the group of Hercules subduing Cacus, by Baccio Bandinelli, which stands before the Palazzo Vecchio—a striking drawing by P. J. Skill. "The Morning Meal" (91), a girl feeding a

sheep, by Joseph
significant title for a row of
on a rocky cliff overlook
an army suggest the imp
ill-omened birds of prey
seem to anticipate.
"On the Wrong Side" (2
by C. T. Lidderdale. "I
(224), by W. P. Burton.
light effect on a moor, by
Sea" (240), by J. O. Long
by W. Severn. "Fatima
Wealthy Arab, Cairo" (27
from the Fell-Stye-Head
—Mediterranean" (303), c
of the sea, and one unusu
ing—Normandy" (305),
child at a shrine: very n
(310), with a group of
Watson. "Right and L
called, with a sportsman
his right and left barre
"Off Duty" (336)—a sis
snow with an empty bask
Mill" (347), by C. J. Lew
J. Ellis: a little crude ar
notwithstanding. "Th
artist, is a curious repeti
ject, though quite differ
Weaver" (358), by Arthu
"Bored!" (366), by Perc
ing of a King Charles
over a friendly Persia
children on a cliff, by
effect with a couplet
Garden" (422) and "Th
Crane, two of the few r
archaic treatment of cl
which was once so largel
(437), by Henry Holli
Cabanca, is interesting
artist: the colouring ha
free from vulgarity. "A
(602), by Townley Green
E. Emslie, of an old neg
whom he has fixed betw
yet pathetic withal. A
we have still left unme
Rayner, G. L. Hall, J.
Glennie, A. Hill, J.
Donaldson, J. Aumonier,
A. W. Weedon, A. Du
H. Sanderecock, togeth
Coleman, Mrs. Guerin, a

The lamented death of
Monday week, and his l
following Saturday, cast
scarcely yet subsided.
made in other portions o

Herr Joachim's first
portant feature at last
performances at which
and the opening allegro,
minor), a work replete
with the best of his men
of them being especially
of the characteristics of
form and treatment, an
paniments. The extrao
day with that grand
of execution to which
hands of Herr Joachim,
sion referred to was in a
solo violin, with accom
sisting only of violas,
The piece (which was
received every advanta
composer. The solo p
varied effects of the orc
so well received that we
it on a second hearing.
Bach's suite for orchestr
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(like the other two) con
dance form except the o
the old overture—that is,
These "suites," with
quaint beauty, are amor
variety of Bach's powe
concert began, and Bee
which closed the progr
orchestra, under Mr. A
"Was sag ich" (written
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formed by Miss Sopl
Schubert and the late
having been contributed
verses to the memory o

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But there is still a high category of drawings, which serve to lighten and lend importance to the collection. We allude to the contributions of artists of established reputation, chiefly oil-painters, who send here their occasional productions in water colours. Prominent among these on the present occasion is the "Paganini" by Mr. Poynter, a most beautiful composition (31), representing Venus, wounded in the chase, seeking the aid of Esculapius. The scene is the garden-court of a Doric palace of temple, with ancient emblems of the healing art over the portals; a plashing fountain in the centre, embowered with vines, solemn cedars, and cypresses. Here, seated on a throne, the god of medicine and

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We have now reached an original and striking drawing by Mr. Heywood Hardy, which worthily occupies a post of honour at the end of the room. "Camp Followers" (190) is the sig-

over a friendly children on a cliff effect with a copy "Garden" (422) and "Crane, two of the archaic treatment which was once so (437), by Henry Cabianca is interesting artist: the colouring, free from vulgarity. (602), by Towley G. E. Emslie, of an old whom he has used yet pathetic that we have still left Rayner, G. L. Hall Glennie, A. Hill, Donaldson, J. Aumo A. W. Weedon, A. H. Sandwood, to Coleman, Mrs. Guel

The lamented death Monday week, and following Saturday, scarcely yet subsided made in other port

Herr Joachim's portraiture at his performances at which and the opening all minor), a work re- vade most of his of them being espe- of the characteristi- form and treatment paniments. The e- day with that g- of execution to wh- hands of Herr Joac- sion referred to was- solo violin, with ac- sisting only of vio- The piece (which received every adv- composer. The so- varied effects of th- so well received th- it on a second hear- Bach's suite for or- such works that ha- (like the other two- dance form except- the old overture—th- These "suites," wit- quaint beauty, are- variety of Bach's 1- concert began, and- which closed the p- orchestra, under J- "Was sag ich" (w- formance of Cher- claimed by Miss- Schubert and the- having been contril- verses to the memo- gramme, together- coming Saturday e- from the works of- for this (Saturday- Lachner (for the fi- forte concerto in G-

The concert giv- day (Friday) week- opened with one- during his early ca- minion of the Arc- meretricious than t- ingly, most of the s- of Mozart's life are- ever, could suppl- accordingly these a- that in G, perhaps, and vivacity in the- tenderness in those- pervading features- time by the socie- "Christian's Praye- "Unser") followed- given by the society- mented on by us in- elsewhere. Again, graceful melody an- charm, although s- sentiments. The s- efficiently sung by- Guy and Mr. Theo-



The boards of the piers built upon piles of jaggeds.



Torpedo



Lighting the fuse

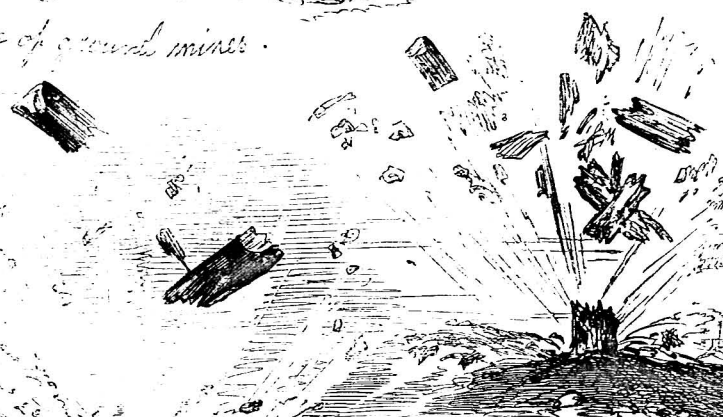


Swinging a cartridge in the hand

Explosion of several mines



The stone to be split by a 2 1/2 lb. cartridge.



Breaking timber post

Breaking steel ingots

After the explosion

W.P.