

CORONER'S INQUEST.

VICTORIA, TO WIT.

This Deponent *

on h oath saith, I am a

* Christian and
Surname in
full.

residing at

approve of them . All those regulations ,as far as they go,are
ulations I would approve of with a few exceptions in the word
they are very good factory regulations . I would suggest impro
ments in the wording to make them less ambiguous .

As a fact *who located* those buildings as danger buildings",were
you consulted about that ? Generally,I was . I do not remember if
under the Act a plan of the buildings had to be submitted to the
Minister altogether . I do not remember wh ether I was generally
consulted as to the position and class of those danger buildings.I
will turn that up and see if I have a record of it . I can only
remember that I was consulted generally . The danger buildings with
respect to which there are special provisions are all set out in
the schedule to the regulations and they are described - the pow-
der room ;the *powdering and covering ; the powder stand ;*
the breaking up room;the mixing house ;the oil and spirit stores and
the magazines ,and the provisions for the quantity of powder and
cartridges in each case is set out .

As a fact at Woolwich ,do they not allow 50 lbs in any one room where
powder is dealt with,I mean,powder either open or in cartridges un-
covered ? 30 lbs is the maximum ,including what is in the bin.

I have the regulations ,Regulation 6,"Not more than 50 lbs of powder eith
er loose or in cases not wadded are to be in the building at any
one time.R.L.100:22/II/84" ? I have the last Woolwich rules,with
me.

E. Tapley Allen

Taken and Sworn before me the *1st* day
of *November* 189*7* at *Footscray*
C. Canster
Coroner.

CORONER'S INQUEST.

This Deponent * WILLIAM MIDDLETON GARDEN

VICTORIA, TO WIT.

on his oath saith, I am a

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To Mr Box - I am storeman in the Defence Department. After the explosion I was employed to collect the debris with a number of men from the Permanent Artillery. We conveyed what we collected to the magazine and there sorted it out - there were 82 barrels - it was collected from the place that was blown up and round about - it was all counted and examined. I handed the list to the magazine keeper, Mr Baldwin. No 1 is, cartridges blank, not exploded, 12,000: No. 2, blank exploded, 12,325 - cartridge ball, without caps, 3,360; with caps, 423: No. 5, powdered and wadded, without caps, 4,675: No. 6, cases: No. 7, ball exploded, 19,310. There is an item, No. 12, sporting powdered, estimated 20,000 rounds - they were not exploded. I believe those were the casks of debris that the Jury saw (list handed in, Exhibit T) To sort and examine the debris it took about three weeks.

To Mr Bryant - Out of the 82 barrels (reading from ^{witness's} rough notes) there were 3,147 cases without caps; cases with caps, 2,310 - cartridge cases that had not powder in at the time of the explosion, 547 - empty sporting, 15,400. "Sporting powdered, estimated 20,000, had the powder in, the cartridge only and the wads and they were unexploded. We counted one barrel and estimated the others - there were 1,200 in a barrel. The barrels were different sizes, and some more full than others. "3,147 cases empty, apparently not exploded" - some of them had the outward appearance of being in the fire and you could not tell whether they had had powder in them at the time of the explosion - they were rolled brass cases. 26,700 bases, that is, heads - there was no sign of the bodies of those. By heads, I mean base disks with the base caps attached to them. Roughly there were about 55,000 cases and cartridges not exploded, apart from those

Taken and Sworn before me the _____ day

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Coroner.

heads

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Hake, and this time I think he came over and talked them over and we got them down to two and the Minister gave way on one, and we gave way on the remaining one. As to this No. 1 filling room, those partitions were put on Mr Hake's recommendation. At the time of this consultation after going through the regulations he insisted on having the bulk head put up at the end of No. 1 filling room. The idea was that when you went through that No. 1 filling room that should be the end of the danger buildings and that the danger buildings would commence there. The one at the Eastern end was put up at once right across the building. In fixing the regulations, the operations to be carried on in No. 1 room were not explained - that would be impossible, being a non-danger room - there were about 600 operations. In the danger buildings they were defined. Those buildings, as I have them, were constructed from designs sent out from Home and approved by the Defence Department before any were erected. As to the quantity of stuff in the room at the time of the explosion, there were about 100,000 *crumpled* blank, from 2,000 to 3,000 at the pressing machine under the bench, and in addition to that about 34,000 ball cartridges partly loaded in the same room, and some sporting cartridges as well - a large proportion of those would be empty cases, paper sporting - they were in the sporting room under operation. Taking the No. 1 room ~~xx~~ apart from ball the partitioned parts there were about 34,000 cartridges being made; that was in addition to those at Miss McLeod's bench. There was no loose powder whatsoever in that room that day. I had been in that room three or four times that morning. If there had been powder I should have seen it because it was always kept on

corner of the bench going to the powder room, and there was none
Taken and Sworn before me the _____ day

of _____ 189

at _____

Coroner.

CORONER'S INQUEST.

VICTORIA, TO WIT.

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heads .

To Mr Box - No.2 ,cartridges blank,not crimped,exploded,12,000 - those
were counted ."No.7,ball,exploded ",those were counted . No.16,
Martini Henry,broken up ,I,470 - those were broken.

To Mr Bryant - I mean by broken up,the powder drawn,and in most cases
the brass stripped off - unattached to the head.(showing samples)

Taken and Sworn before me the _____ Ist
day
of November _____ 189 7 at Footscray.

William.M.Garden.

W. Gardner
Coroner.

CORONER'S INQUEST.

VICTORIA, TO WIT.

This Deponent * ALBERT BALDWIN

on his oath saith, I am a _____

residing at _____

* Christian and
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To Mr Box - I am the keeper of the powder magazine, Marybyrnong. I received the debris of the accident from the last witness. I concur with him as to the amount - I made up the list. That was brought from the factory to me and placed under lock and key and afterwards examined as per result there. I think none of them are over-estimated, if anything, rather under - there is nothing there in excess of the facts. That is what the Jury saw in those barrels, four "frames" (showing one) "ammunition box" (showing one) "26,700 bases" (showing) "No. 16, Marini Henry, broken up" (showing .Exhibit U) They appear to have been broken up by hand and the powder taken out. "No. 1 cartridge blank, crimped, 12,096" (showing) Those are loaded and have powder in. Amongst the debris there were some not crimped, not exploded. There appear to have exploded, about 30,000 rounds.

To Mr Bryant - I cannot give the proportion of crimped to uncrimped. The figures were supplied by Mr Garden, not made out by me.

Taken and Sworn before me the 1st day
of November 189 7 at Footscray.

A. Baldwin.

C. Cantley
Coroner.

CORONER'S INQUEST.

VICTORIA, TO WIT.

This Deponent * WILLIAM MCGREGOR CAIRNCROSS

on his oath saith, I am a _____

residing at _____

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To Mr Box - I am Controller of the Ordnance branch of the Defence Department. I hold the commission, Lieutenant-Colonel in the Militia. I have been Controller of Stores fourteen years ; that is during the whole time this factory has been in operation . I have been in Court during two of the days of the Inquiry. While in Court I saw exhibited on the table a pressing machine . If the machine was sold by the Defence Department to the Ammunition Company the Defence Department had never pressed blank cartridges - they never had a machine for pressing blank cartridges . I know that Captain Whitney bought 25 or 26 sets of re-filling machinery for ball cartridge . I recognised the machine - it seemed to be a similar shaped one to one we had for pressing the bullets home after the cartridge had been re-filled with powder and wads . I cannot say it is identical; if so, that machine has been altered in some very essential parts . That has not the appearance ^{in certain parts} of the machine we sold to Captain Whitney: it had a guide on it and a handle , but it had not a piston to drive the powder home . The body and handle appear to be like the machine - it had not the piston but a *small hole coned* to allow the bullet to go into it (*showing*). I would almost say it is the machine with those alterations , and it had a Kynoch's brand on it - there were 25 of them. The Department never made or pressed blank - none of ours had that spiral spring on . If it was our machine, that is an addition . I am a Member of the Testing Board . As to all the testing of ammunition on behalf of the Department I have been present at almost every test . I have made a comparison from the records of the Department of the rejection of Martini Henry ball ammunition ! I produce file , No. 902,31/12/95, 13,260 were rejected on that batch - the batch was

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134,000 cartridges - they were rejected for faults, five pierced caps having been found. The packing and the powder were satisfactory in that case. (Exhibit V) I produce file 903; 136,500 cartridges of which 68,250 were rejected (Exhibit W) - the packing was satisfactory and powder satisfactory.

Mr Bryant objected that the line of inquiry was not relevant.

The Coroner overruled the objection.

To Mr Box - I produce file No. 928, showing 81,900 rejected (Exhibit X)

Also file 565, showing 42,000 rejected, 21/7/96 (Exhibit Y) Grounds of rejection - ~~grounds of rejection~~, having failed in accuracy after a second proof - packing satisfactory - powder satisfactory, so far as can be judged by the eye and weighing. All I have mentioned up to the present time are ball cartridge. 9/9/97, 10,000 odd cartridges for the South Australian Government - I have not those proceedings - I am a Member of the Board, but was not there on that occasion - Mr Hake has those.

To

Mr Bryant - As to file 902, the testing we put them to is shooting on high range and taking samples of the ammunition to see they all fit and also internally - we pull some to pieces - each shot must be within a certain radius of the centre. "On comparison with Imperial" means that we allow 2 inches of handicap in favour of the Colonial ammunition - the Imperial would require to be not more than one foot variation, but we allow 14 inches or perhaps 15 inches with the Colonial. If the figure of merit ----- on the paper is 1 ft 4 ins. and we passed it, it may have been a very windy day. I should think it ought not to be passed - that is my signature (reading the paper) - that is evidently explained. Supposing the English turned out very bad that day, 1 ft 2 ins, we would pass the

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other as I ft 4 ins, allowing the two inches . Looking at another lot, I3,260 rejected - nine cases containing 540; five cases containing 520; ten cases containing 580 each, total I3,260 - figure of merit, I ft 2 ins . Faulty cases I + 4 . We take 4 per thousand to test . Out of about 52 tried we *found* five cases faulty - it might be in the cap or the burst cases . If the cap is ~~px~~ pierced by the striker that is another fault - that would show it was a very thin copper cap. It does not necessarily follow that the whole I3,250 cartridges are bad - we might have dropped on the bad ones *all* together , and all the others may be entirely right. As to No. 902 in the previous ~~lot~~ *lots* 98.99 and IOI 44,000 were to be re-tested , and in this report 902 they are re-tested - lots 98 and IOI recommended for rejection , two pierced caps , IOI, two burst cases - out of 84 cartridges there were two pierced caps , Because there were two pierced caps in 2I,000 cartridges the whole 2I,000 were rejected. In lot IOI, IO,500 were recommended for rejection because two cases burst . When one bursts it may strike a man's eye - that has happened with ammunition factory cartridges - it should not happen with good ammunition - I do not know anything about rifle shooting . Batch IO3, 20 cases each containing IO50, 2I,000, faulty cases - two pierced caps and one burst case - that is in 84 cartridges to be rejected . The proportion of burst cases and caps allowed is laid down by regulations - I cannot remember the margin allowed without the papers . Lot IO7, I5,750 - faulty cases - one pierced cap and one burst case and one misfire out of 60, three flaws - of the whole lot about I6,000 were rejected . Lot IO4; I5,750, and lot IO8; I5,750 "inaccurate". Lots IO5 and IO6, inaccurate and defective cases , recommended for re-test. Lot 98; 2I,000, that had

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previously stood over for re-test - that had been recommended for rejection, two pierced caps . Supposing we are testing the factory's ammunition at high range we always test some Imperial ammunition for comparison - we do that on every occasion . This is the regulation (reading the same) " _____

~~Martini Henry ammunition~~, We consider that does not cover what has been accepted from the Ammunition Company - we use the Imperial ammunition every time . Lot 98; 21,000, figure of merit 1 ft 6 ins - one faulty case - no misfires - to be re-tested for faults and accuracy. Out of 84, one faulty case . It was a question of accuracy in shooting in that case - recommended for re-test for faults in accuracy. Lot 99; 10,500: figure of merit 3 . One faulty case - no mis-fires - re-tested for faults - out of 42, one faulty case .

In 98, 99 and 101 it is shown they are not to be rejected , but re-tested:

where is it shown that they are to be rejected , as you stated to Mr Box? I cannot find that document. There is no paper in this file that shows the recommendation for rejection - it does not exist and never did exist . "Recommendation for re-test" is all that is here . The official records that show the reasons for the recommendation for rejection of those lots are on the proceedings of the Board (looking at papers) These are the re-tested lots and this is what has to be done with them - that is the place where the rejection is made . This file of papers contains the result of the first test . The sheets that follow show the tests for accuracy. In 902 those three lots, 98, 99 and 101 are recommended to be tested. We can see that 98 and 101 were re-tested - we do not have the blue paper for the second test - we merely fall back on the recommendation shown in the first . Captain Whitney only gives the one paper

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when it is tested . Those are Captain Whitney's forms, not the Department's. 97,650. "The Board wish to draw attention to the large number of pierced caps in this test, eleven. In addition to those defects a very large number of caps were found to be, after firing, almost perforated . Batch III: 15,750 - figure of merit I.09 - faulty cases, nil; misfires, nil: recommended for acceptance on re-test on comparison with Imperial". We re-test the ammunition . II0: II,550 - figure of merit, I.33 : faulty cases, nil, and misfires, nil; recommended for acceptance on comparison with Imperial. II,550 - I.45 - faulty cases 'I ~~in~~ burst cases ~~recommended~~ recommended for acceptance . I do not think it is a pretty severe test - it is just the ordinary - those are the *rules* laid down by the Imperial service . I04, the lot to be re-tested on the first occasion . I.47 - misfire, nil; faulty cases, nil - they are to be re-tested . Re-tested I0/2/96 - result, ~~fm~~ figure of merit I.II - faulty cases , three pierced cases - misfires, nil - recommended to be rejected . Out of 63, three found pierced, so the whole were rejected . I am aware that all the caps put in are imported by the factory from England . I do not know that they are obtained from the War Office, England. The defect ~~as~~ there was ~~no~~ *in the manufacture* of the cap. I05, a re-tested lot , 15,750 - figure of merit, I.70 - faulty cases, two burst cases - recommended to be rejected . "Not taken" means the diagram is not taken because there were two burst cases . We fired 63, and there were two burst cases, and the whole 15,000 were rejected. Lot I06: 10,500 - figure of merit, I.23: not taken. On the first test the figure of merit is I.23, and on the second test the figure of merit was ~~not~~ not taken because we

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found two pierced *caps* two out of 42,so the whole were re-
jected . Lot 108,lot to be re-tested - on the first occasion 1.36
was the figure of merit . Second occasion it was not taken because
there were two burst cases and one pierced cap - out of 63 there
were three defective . Lot 109:15,750 - figure of merit not taken-
faulty cases ,two pierced caps and one burst case ;that is out of
63 . Lot 112,blank,12,600 - figure of merit 1.41 - two pierced
caps - recommended for rejection - that must be a mistake with
blank cartridge (looking at the papers) The papers show that that
is a mistake of the Ammunition Company's - it should be *ball* cart-
ridge,not blank. We have been led into a trap by the Company putt-
ing in "ball" - it is a small error that might take place in any
office . Lot 965 ;42,000 rejected out of 303,020"The following
lots were recommended for rejection ~~after~~ having failed in accur-
acy after the second proof . That shows that *168* was rejected for
want of accuracy in shooting . Following that ,965,from 27th July
1896 right on to the present time my papers show that no cart-
ridges at all have been rejected - I cannot say how many have been
supplied to the Government. If you say that since July 1896 a lot
of 500,000 have been supplied by the factory to the Government of
South Australia which were tested by the Testing Board here ,that
is probably true . They were passed with the exception of one re-
jection ,and I think it was not submitted again for test ."Rejected
8,400.May 31st,tested again and passed" . There have been delivered
to the Victorian Government since July /97 blank and *ball* 170,000.
odd - I cannot say whether there were any rejections . Between
July 1896 and 1897 we have had at least a million and a half ,and
I believe there have been no rejections in them. This paper is a

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record of all the rejections up to now, so that there evidently have been none - that applies to ball. There has been a rejection of a small lot of blank since the accident. Since July 1897 the supply of caps the factory have from England has improved - there have been no pierced caps for sometime. The chief defects in previous years were the pierced caps.

To Mr Box - There were some Kynoch cartridges and some others ~~x~~ sent to the factory to be converted to blank - 83,586 Colonial Ammunition: 161,750, Kynoch, and X 484 American - I sent those to be converted. I cannot say when the 83,586 were manufactured. Permission was not ^{for} asked by Captain Whitney or the Company. As to the re-use of the powder taken from those cartridges, nothing was ever said about it as far as I know. As a fact I do not know whether that powder was re-used.

To Mr Bryant - The 83,586 would be in stock for sometime before being sent for conversion. If Captain Whitney says they were in stock from 1890 I cannot say whether it is a fact.

To Mr Fedden - The last lot rejected a month ago was I think because the burst cartridges were being fired off - I think that was the ~~xxxx~~ cause. Bad shooting might be through the badly constructed cartridges - damp powder would make bad shooting - I cannot express an opinion as to the cause of inaccuracy.

To the Coroner - As to a comparison between the ammunition supplied by this factory and that supplied by factories in England we have copied the English regulations as to rejection. I cannot say how the results will compare with those here - I have had no experience in ammunition factories in England.

Taken and Sworn before me the 22nd ^{1st} day
of November 1897 at Footscray.

W.M. Cairncross Lt Col

C. Cantler

Coroner.

CORONER'S INQUEST.

VICTORIA, TO WIT.

This Deponent *

CECIL NAPIER HAKE

on his oath saith, I am a

residing at

* Christian and Surname in full.

To Mr. Box - I am the Inspector of Explosives for this colony. In the

dealing with and examination of explosives I have had over twenty years' experience: that is in England and here. As to England I firstly studied chemistry four years, I subsequently was chief assistant to the Chemical examiner at the Explosives Department of the Home Office. I was Acting Chemical Adviser for one year during the absence of the Chemical Inspector. I was four or five years practising as an expert in London and then I came out here and have been here seven years. I had acquaintance with the ammunition factories at Woolwich Arsenal. I was there several times prior to my arrival in the colony, and was working there over four months continuously on a visit to the old country at the small arms factory Woolwich Arsenal. I visited the site of this explosion on the afternoon of the day following the accident (Looking at plan "S")

The roof was blown off, half being deposited on the north side and the other half being blown over No. 2 building and deposited about fifteen yards distant from No. 1. The roof was practically intact not even the wood lining being seriously damaged. Both ends of the building were blown out and about half of the sides towards the west end on both sides. A window in No. 2 building was blown out. Part of the galvanised iron was perforated and inside No. 2 I found a number of cartridges which had exploded. The roof of No. 2 building was crushed in to some extent and some of the windows are broken. The wood lining of the two roofs was not damaged except

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that one corner where it seemed to have struck something. The thin wood lining not being damaged suggests to me that the explosion was of a very gradual nature, not sudden, but caused through slow combustion of gunpowder. (Looking at photos.) I made a very careful and detailed examination of the ruins and found that the galvanised iron under the bench where Miss McLeod had been working had been subjected to severe heat (the north-east end of No. 1 building). at that spot. The wood work under the bench was severely charred but only ~~seriously~~ ^{slightly} on so on the surface. Along the same side of the building under the bench similar effects were present but to a less extent at least as far as the walls remained standing. The thin wooden bin standing against the partition at right angles to Miss McLeod's bench was severely charred and its appearance suggested to me that the flame had ~~brushed it~~ ^{flashed out} from under the bench in its direction. On the opposite side of the room signs of heating on the bench and galvanised iron were visible. That is where the other two girls were said to be working. The boards lying on the rafters on which a number of small wooden and cardboard boxes had been deposited were displaced and the boxes had been scattered throughout the room. There were three holes in the floor at the east end towards the powder house but otherwise the floor was not damaged at that end. At the west end the floor was completely broken up except within the partition, the "sporting" room. The floor was covered with debris, cartridges, sporting and military, some exploded and some not, a large number of loose bullets, ammuni

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ammunition boxes, small cardboard wooden boxes, copper ^{sides of} caps and
large ~~rest~~ ^{mesh,} frames for holding cartridges, an instrument that ap-
peared to be a hand capping machine, trays, wooden rammers for pu-
shing wax wads into cartridges, wax wads, ^{glazed} ~~grass~~ board discs, wads
for sporting cartridges of various kinds, a number of empty powder
barrels, A large quantity of shot was strewn about the floor and
benches. Immediately opposite the room was found a small box con-
taining loose powder which I now produce. That is exactly as it
was found. The powder is unexploded. It was very wet when I found it
That was found outside the room by constable Wardill and brought
to me. I was there at the time when he found it. It was found at the
south-west side of the building a few yards from the building. Ev-
erything was ~~broken~~ blackened in the room and there were distinct,
what are called, ~~plume~~ ^{lined} marks formed by unconsumed powder along the
roof and under the benches and from the general effects I should
say that the damage done was done by gunpowder explosion. I saw a
notice board in that room. I had ~~in~~ ^{it} unscrewed by constable "ardill
and handed to the police. It was in No. 1 room about the centre of
the room. The partition next the factory had been completely blown
down. On the notice board, as far as I remember, it contained the
following directions (it was quite decipherable) "Not more than one
truck of powdered cases uncovered with wads to be in this room at
any one time". That is the sense of it. I inspected seven magazines
In No. 2 there was new "R.F. G. 2" and sifted "R.F.G.2." powder, the
^{second magazine}
~~stolen and given before me the~~ beginning at the west end. They are not all on that

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plan.No. 6 contained sifted ". R. F. G. 2(exhibit "a.1.") and sift-
ings from "R. F. G. 2.":that is what passed the sieve. No. 7 con-
tained sweepings from the floors.I examined the laboratory.It con-
ta ned new blank, a small quantity of new "R. F. G.2.",about 15lbs
and a small bag,about 5 lbs. or 6 lbs. of sifted "R. F. G.2".I
took samples of the sifted "R. F. G. 2" from the Nom 2 magazine ad
from the No. 6..I did nottake any from the laboratory.I made an
examination of the sifted powder from the magazines.I found in
that particles of wax,particles of grit and particles of iron mix-
ed with the powder.I produce samples.I took about 1½lbs. This is a
sample of grit taken from sifted powder in the factory magazine
taken from 1½ lbs. of powder ("E.1")This is a sample of particles
or iron found in the same powder from sifted "R. F. G.2." from
factory magazine ("F.1."). That is a sample of wax extracted from
the same powder("G.1.") . That is a sample of "R. F. G" new ("G.1")
(exhibit "R.1.") and that is a sample of new blank ("exhibit C.1")
That is a sample of sifted powder taken from the magazine in the
factory, and that is a sample(No. 15, exhibit "Z")of siftings.That
is what passes through the sieve.I have examined that.It contains
wax, grit, and iron. I collected 300 blank cartridges that did not
explode out of the debris.I opened them up,extracted the powder
and examined that. They were crimped.I found particles of wax,par-
ticles ^{of iron} and particles of grit . The powder was very dusty(handing
in sample),14 grains of wax from 83 Martinia Hneri blank cartridges

~~Taken and sworn before me the G.2. "(exhibit "a.1.")~~

of _____ 189 at _____

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Surname in
fullfrom dusty "R. F. G. 2." (exhibit D.1.) That means that out of 300

83 contained that quantity of wax. I also found the particles of

iron (exhibit "H.1.") and particles of grit (exhibit "I. 1.") inthose 300. That is what I got out of 83 (handing in samples) Fromthat examination I should say ^{that the} powder in those 300 cartridges judg-ing by the results of the examination ~~that it~~ had been extracted

from small arms ammunition which had been wadded with wax wads. I

think the grit must have got in during the process of sifting and

handling and the bits of iron appear to me to have got in from the

sieve. There are a great many pieces of very thin iron wire which

may have been parts of the sieve. I had all the debris taken to themagazine. I have ^{read} ~~heard~~ the regulations between the Defence Depart-

ment and Captain Whitney and I have been in court during the whole

time of this inquest. As an expert, I say ^a ~~the~~ "danger building" in a

small arms ammunition factory is a building in which there is any

powder present or liable to be present or in ~~the~~ process of beingmanufactured. I should include ammunition covered with a wad as ^{requiring} a

danger building. Blank cartridges pressed or unpressed are within

that definition "uncovered with wads" on that notice.. It is prac-

tically loose powder because an explosion of one cartridge would

be liable to communicate the explosion to other like cartridges

adjacent. They are liable to go off en masse and if they had no

wads on them the same applies. There is a greater degree of risk

of course when they are uncovered than ^(when) they are covered. Ishould not say that blank cartridge paper pressed or turned in are
Taken and Sworn before me the _____ dayof _____ in effect covered with wads. I heard ^{with} the evidence that the blank

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cases the paper is turned down in the powder room and in the partitioned off No. 1. and then taken to the machineⁱⁿ No. 1 to be pressed. In that case it is quite liable to spill grains of powder out of the case in handling. That board containing the notice that not more than one truck of powdered cases uncovered with wads to be at any one time in this room coupled with the regulations indicates to my mind that the room was a danger building, that the operations being carried on in the room were such as should be only carried on in a danger building. I have heard the evidence of what they have done in that room. The fact that the cartridges were brought into the partitioned part would not relieve ~~that~~ from the condition of a danger building. It would be considered as one room. The light partition does not decrease the risks attendant on and inseparable from those operations. Therefore within my experience in a "danger" building the partitions are part of the building. Those partitions went only about 7 feet from the floor. Apart from the notice board in the room, having heard what the girls say they did in that room, I should certainly say that it is a danger building. The evidence was that the girls had "drawn" powder. I never heard that expression. I know the term "breaking u p" cartridges and that includes the drawing of powder as they called it. The powder is ~~læe~~ loose powder when drawn from the cartridges and increased risk attaches to it. As it appears in the regulations of the factory they had a breaking up house. I did not inspect ~~it~~ because the key was

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lost and I did not feel justified in using any force. I simply left it. I was shown the smoke room called the "breaking up house." I asked Captain Whitney where the breaking up operations were carried on: he told me in the "smoke room" and directed me to it and that is marked on the plan to the west of the main building. The room used for breaking up most decidedly should be treated as a danger place. It is a most dangerous operation. In the debris of this room I found things that led me to believe it was a room used for breaking up cartridges. I found half stripped cartridges. The brass was still adhering to the base of the cartridge. I found some of those cartridges with the powder partly in them. The whole charge had not been removed. Those cartridges suggested to me that breaking up operations had been carried on in the building at some time or other prior to the accident. I examined the siftings from the factory magazine and found certain particles of iron (showing sample) I examined $1\frac{1}{2}$ lbs. to get that but did not extract the whole of the iron (exhibit "J.1.") From the examination I made of sifted powder from the magazine and from powder taken from the cartridges which remained and were not exploded I found the iron and grit and wax. In my opinion, the cartridges which I examined which were unexploded contained sifted powder. The peculiar danger from that arises from the possible presence of grit or iron or particles of cap composition. In the operation of breaking up part of the cap composition is liable to get in. The cap composition contains fulminate as

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one of its ingredients. The presence of the iron or grit would lower the igniting point of the powder, therefore a reduced blow or reduced friction would be liable to explode the powder more easily than if it were absent. From the examination under a ~~microscope~~ microscope I found that those iron particles consisted to a great extent of pieces of wire. From that I drew the conclusion that it must have come from the wire sieve. There were sieves found in the No. 1 room. I believe there were sixteen. They appeared to me to have been used for breaking up operations. They are similar to sieves used for that purpose. The bullet is first extracted and the wad and then the powder is poured out through a sieve. The sieve is of large mesh which would retain the bullet and the wad and allow the powder to fall through. The ^{presence} ~~portions~~ of the sieves indicates that cartridges may have been broken up in that room. It suggests that. I heard the girls describe that they did open cartridges in that room. I only know the term "breaking up". I understand by that the taking of a cartridge to pieces and separating the different particles. There were cartridges found with powder in them that had been broken up. Several with the brass stripped down to the base and the powder was still adhering to the cartridge. It looked to me like unexploded powder. (samples handed in) After that cartridge had been broken up the powder remains until it is poured out. That powder has evidently been wetted. A lot of water was poured on and it was also raining. I heard one of the girls say here there was

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no loose powder in the room. There was loose powder found imme-
diately outside the room. I think it is quite possible consider-
ing the very crowded state of that room and the fact that the girls
were evidently shifted about from one room to another frequently
that there might have been loose powder in the room without their
knowing it, without impugning the truth of their statement. .The
floor was wood, the benches were of wood and both the floor and the
benches were fastened with exposed iron nails. That was not right i
in a danger building. In that building the girls were not obliged
to wear specially prepared shoes. In a danger building the girls
should be provided with magazine shoes, shoes without iron nails ad
they should also be provided with special magazine clothing, that
is clothing without pockets. They should change their ^{ordinary} clothes before
they go into a danger building for those clothes before going in
and they should submit to a periodical system of searching to pre-
vent the introduction of dangerous articles into the building. The
truck that came into that room was connected with an iron frame
work, a wooden platform fastened with iron nails exposed. The wheels
were of iron. That is not a proper truck for a danger building. It
is improper because it is introducing exposed iron into the build-
ing and very probably grit. As to the pressing machine, I agree gen-
erally with the opinions which I have heard expressed by the exp-
erts, Captain Harding and Mr. Rosier. The simple danger which I can
see arises from the contact of two unyielding surfaces, the collar
and the frame work, the head container and the guide. If there were
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powder on that guide I should think a blow would very likely cause an explosion. With powder that ~~is-gritty~~ has grit and iron substances in it a sudden pressure and percussive force or friction would cause an explosion. A thousand cartridges would be an excessive number for a girl to have under the bench at a time. I should say ^a ~~the~~ quantity which if it exploded would not do any serious damage, say equivalent to half a pound of powder, 50 cartridges. If there ~~was~~ ^{were} an accident to this machine with only 50 cartridges below it, and they all exploded the explosion would not be serious. I am speaking of the arrangement and the conditions under which it is there. I have heard the evidence and have formed an opinion as to what was the cause of this explosion. As to the cause, I have heard in the evidence that Miss Fitzpatrick stated before her death that she was stooping down to pick up a box when her attention was directed to an explosion in the neighbourhood of Miss McLeod's bench. If that be so, it points to the initial explosion having actually occurred at this spot. Assuming it did so occur the further communication of fire to cartridges or explosive on the bench or under the bench or on the floor is quite ~~possible~~ conceivable. The galvanised iron at this spot under the bench showed signs of having been subjected to severe heat. The wood work under the bench was very badly charred. The large bin standing at right angles to the bench was scorched and from the powder marks I was enabled to trace a flash of flame from one bench in an upward direction to the board ~~tying on the rafters on which a large number of cardboard and wood~~ ^{of} ~~en boxes had~~ ¹⁸⁹ ~~been~~ ^{at} stored. It is quite probable that those boxes of a very light inflammable nature were ignited and dispersed

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through the room. This would account for the appreciable space of time which is said to have been between the first report and the main explosion. The conditions under which this room appears to have been worked suggest to my mind several causes. To which particular cause the accident was due it is of course very difficult to say. The probable causes appear to me to be, first, the defective condition of the machine: secondly, the explosion of a cartridge in the machine: third, the absence of even the most elementary precautions to prevent the introduction of grit or iron or other dangerous articles into the building: fourth, the wearing of shoes with iron nails by the employees in this building and the presence of iron exposed nails in the flooring and the benches. I think to each of those causes an equal degree of probability must be accorded. If sifted powder or powder extracted from ~~slar-arm~~ small arm ammunition was being used in this building, I think a greater degree of probability attaches to it as being the cause of the accident than to the other causes mentioned. Further, the storage of those large quantities of boxes on the boards and rafters assisted very materially in extending the initial explosion through the room. As far as my observation goes, this sifted powder that was being used in that room is the most probable cause of injury, being used in that machine and the presence of this powder would abnormally increase the ordinary risks which one expects even in a well regulated building. It has been suggested that the girl McLeod revers

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reversed a cartridge and put the cap against the piston. That is quite reasonable. If that was the case it was a risk that could have been foreseen and could have been provided against, ^{the} and ordinary provisions taken for a risk of that sort are to subdivide the explosive so that the explosion is limited as far as possible to that cartridge or to a very small quantity. If there were 1,000 or 1,500 blanks and that went off and fell down that would create a serious explosion no doubt. As to blank cartridges that have been covered with the paper and pressed down I have explained as to their possible explosion in a mass. I placed a number of those cartridges in a small barrel and placed a cartridge with a fuse in the powder into the ~~body~~ of the cartridges completely covering the cartridge containing the fuse with the other similar cartridges. I lit the fuse and the explosion was practically simultaneous-instantaneous... I made a second experiment. I placed a cartridge containing a fuse on the top of the similar cartridges and ignited it and there were three distinct explosions and a very big mass of flame but in both cases the explosion of the one cartridge was communicated to the other cartridges. They were pressed cartridges. That does not render them safety cartridges. Those cartridges as a matter of prudence ought not to be in large masses in a room which is not a danger building. They should be treated as loose powder practically and their presence proclaims the room to be a danger building and necessary precautions should be taken in dealing with

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matter in that room if the object is to prevent accident. I have
seen and read the regulations. This room, under their own regula-
tions, was never treated as a danger building and absolutely no
precautions as to that. No 12 of those "Regulations for

the Colonial Ammunition Company" was not
complied with as far as I have heard
in the evidence. I do not think that
No 6 was sufficiently attended to. Washing
with water is absolutely necessary in
a danger building. As to Number 12

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