

W.S. 664
ORIGINAL

BUREAU OF MILITARY HISTORY 1913-21
BUIO STAIRÉ MILEATA 1913-21

No. W.S. *664*

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COSANTA.

BUREAU OF MILITARY HISTORY, 1913-21.

STATEMENT BY WITNESS

DOCUMENT NO. W.S. 664

Witness

Patrick McHugh,
33 Barrow Street,
Dublin.

Identity.

Lieut. Dundalk Company, Irish Vol's. 1916;
Fitter Parnell St. Munitions Factory, 1919-'20;
O/C. Munitions, 1st Southern Division, 1922-'23.

Subject.

- (a) National activities, Dublin, 1917-1921;
- (b) Manufacture of arms, Dublin, 1919-1921;
- (c) Co. Cork, 1922-1923.

Conditions, if any, Stipulated by Witness.

Nil

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Statement by Patrick McHugh,

33, Barrow St., Dublin.

When all the men had gone home, Hannigan, Paddy Hughes and myself, each of us aware at this time that we had been charged with the shooting at Castlebellingham and that there was a charge of murder against us which we must face if arrested. As we would not give ourselves up, it was decided to evade arrest. Paddy Hughes went to Keating's house near Beggstown, Hannigan procured a bicycle and said he was going to Limerick while I went to Mullaly's house - Beggstown. On the following Sunday I went to Mass in Dunboyne and on the Tuesday following the R.I.C. raided Mullaly's and interrogated me. They were very suspicious and mentioned that I answered the description of a fellow wanted for shooting police. I was posing as a tramp fiddler. They also mentioned I was in bad company in Mullaly's, hence their suspicions of me. It must have been my retorts on Mullaly's behalf that allayed their suspicions then. I remained there that night and next morning I set out for Dublin, R.I.C. arriving to arrest me shortly after I had left. I contacted my sister who was then at business in Georges' Street, the first news of me from Easter Sunday. I remained in her lodgings on Iona Road until I got in touch with a friend, Tom Kieran and his wife, who had a room in Mountjoy Street. I transferred to Kieran's and from there I contacted Father Costello of the Dominican Order, with whom I had been very friendly in Dundalk. He put me in touch with Brother Joachim, a grand Irishman and republican. I assumed name of John Kiernan, which was name of R.I.C. Sergeant who swore I did shooting at Castlebellingham. My comrades later called me Seán, hence I became well known as Seán

Kiernan.

Brother Joachim took me under his protection. I had free run of St. Saviour's House and anyone I wished to meet I could safely do so there. Later I made full use of this concession and met my family and relatives many times in that house. Visitors to me entered the house from the Dorset Street entrance while I always entered and left at the back in Granby Lane.

Brother Joachim set out to find me employment and succeeded in doing so with the Lucania Cycle Company, Pleasant's Street, owned by Mr. John O'Neill. He also obtained lodgings for me with Mr. M. Dunphy next door to the cycle factory, so it was only a case of from bed to work; no travelling and therefore no danger of meeting anyone.

I had to keep low and quiet as R.I.C. from Dundalk were constantly in the city on the look-out. Brother Joachim was my Intelligence Officer. He visited me frequently and kept me posted. At one time in 1917 it looked as if the R.I.C. were hot on scent and Brother Joachim had arranged with Michael Collins that I be moved to America. He told me of the arrangements and asked me if I would go. I thanked him and Michael for their interest but said I preferred to remain at home until I was forced out. I avoided the main thoroughfares of the city and whenever I went to St. Saviour's I kept off the beaten tracks, so I never ran into anyone who might know me.

I continued working in O'Neill's without incident until early 1918 when there happened to be a trade dispute. Mr. O'Neill, for some reason best known to himself, thought I was responsible for it and as I would not disclose the name of the responsible party I was dismissed. Later I got employment in Sir Howard Grubbs, Rathmines, where I worked until the end of the 1914 war. While in O'Neill's

I had contacted Garry Byrne and through him a number of 4th Battalion men who had been released from Camp. I also made contact with 3rd Battalion men in Pleasant's Street through Michael Dunphy and joined "C" Company, 3rd Battalion on its reorganisation in 1917.

I made many friends in the 3rd Battalion and changed my lodgings to the house of Michael and Liam Kavanagh, Pleasant's Street, both of whom had been out in 1916. Here I was very happy. Mrs. Kavanagh treated me as a son and I shall never be able to repay the kindness of herself and her family to me. I was in close touch with the I.R.A. through all my contacts.

During the end of 1917 and early 1918 I attended and interrupted many recruiting meetings with members of the 3rd Battalion, being held in the Battalion area. I took part in all of 'C' Companies' activities.

1918 brought the Armistice, and I was one of a party defending No. 6 Harcourt Street from Trinity boys attack. I was on duty at Sinn Féin Árd Fheis and also at First Dáil, as at this time I was unemployed, Grubbs having ceased working.

All this time my name appeared in Police Hue and Cry wanted for Murder but I found that one was safer in the crowd than alone, so I was now working openly. The conscription campaign had confined R.I.C. to their own areas and I had nothing to fear from D.M.P. or Detectives.

During my period of unemployment I had a conversation with Tom Young, 4th Battalion, who told me that the Dublin Brigade was looking for a good fitter and reliable man for munition work. At my request Tom informed Michael Lynch, Brigade Officer in charge, that I

was idle and would consider myself honoured to be on such a job. I then felt that if I was caught doing something more than the charge already against me that the punishment could not be increased and I would have obtained great satisfaction.

I was known to Michael Lynch and he agreed to appoint me if Brigade Council was satisfied. He placed the matter before the Council meeting, Michael Collins being present. I was unknown to other officers but on Collins hearing that my real name was - McHugh - he recommended me to the Brigadier and I was appointed to the position. Thus in February 1919 I was transferred from 'C' Company, 3rd Battalion, to Brigade Munitions, to be relieved of all other Company duties, my whole time to be employed on munitions. As members of this staff we were expected to avoid anything that might draw attention to ourselves and thereby endanger the factory.

Those engaged on munition work when I joined the staff in February 1919 were: Michael Lynch, V.O/C Dublin Brigade, in charge, Mat Furlong, who was later killed in County Meath when testing a trench mortar, in charge of factory, Tom Young, moulder, Seán O'Sullivan, cage making, Tom Keogh, filling, Christopher O'Reilly, boy in cycle shop, Joseph Lawless and Archie Heron, tenants of premises 198 Parnell Street and owners of cycle business carried on there under name Heron and Lawless.

The amount of cycle business done was very small and the boy in the shop could easily cope with repairs and inquiries. The cycle business was carried out in shop, ground floor at street level, munition work being carried on in the basement. The shop consisted of a front and rear room, access to basement being through door in rear

room to stairs while at the head of the stairs there was a door leading to the hall of tenement rooms over the shop, also door at end of hall leading to small yard at basement floor level. As the basement premises included a yard, the door leading to the yard was barred on basement side as was also door from shop to hall. The basement was L shaped bottom of L next street about 12' x 12' vertical side leading back to yard about 7' wide x 12' long. In this space was fixed an underground furnace connected with the house chimney, moulding trough, care-making bench and oven. In front portion was small lathe with bench facing window under street grating, smith's forge and bellows. Flue from forge connected also to house chimney. The furnace was about 1' - 6" square by 3 to 4 feet deep commonly used by brass founders with grate at bottom, small power fan under to augment draught when necessary. Heavy metal cover on top.

A large electric light fixed in centre of basement controlled by switch in back room of shop. This when switched on was signal of danger, sign to clear. In such an emergency grenade shells and parts could be hidden in forge bellows or under foot and bellows though full of grenades could still be used though one had to be careful not to blow too hard or grenades would roll about.

Smelting was done in standard Morgan crucibles in same manner as carried out in brass foundries except that it was used also for iron which requires much higher temperatures than brass, thus life of crucible was much less than it would have been if used for its designed use and there was always the danger of disintegration of crucible under the great heat required for melting iron.

Fortunately there were never any accidents as moulder took great care and never used a thin crucible for iron.

Foundry work consisted of moulding and casting grenade cases or shells, brass bodies for firing mechanism, or, as we called them, necks.

All moulding and casting was done in small moulding boxes each box containing eight shells or 24 necks in Standard foundry moulding sand.

Iron cast one day brass next. Three days on iron one on brass would almost cover output for week. Casting usually took place at evening and was ready for machining and fitting work next day. Two castings of brass could be made in one day.

When casting brass a great volume of white fumes is given off and it was always necessary to open windows under footpath grating to allow fumes escape.

The filling of Parnell Street with a white cloud became so regularly a weekly occurrence that no one ever took any notice of it only to say Heron & Lawless's are working, and no one ever attempted to send for Fire Brigade on seeing cloud leaving basement.

Our cure for fumes was a drink of milk after casting which counteracted effect of fumes on person.

Castings had to be prepared for machining. This work known as fettling removal of all fins etc. on casting was done on grinder. Cases and necks were bored in lathe by Matt Furlong, also boring, machining and partly cutting the brass rod part of firing set and making of strikers.

All screwing and tapping of necks and shells was done by me by hand as was also making levers, slotting of strikers, fitting and assembling, screwing and finishing firing set, body and parts.

7.

Working in shirts and pants was the order of the day for working with a file or hacksaw can be warming enough under normal conditions without spending a day of it with a furnace at your back. I was busily employed cutting up sheets of iron, making safety levers and all the other work involved before assembly and little notice was taken of time. The main object was to produce as much as was humanly possible for the boys who were crying out for the stuff. Thus the work, although not spectacular, had its moments of strain and was all hard toil. The output at this time was 100 finished grenades per week. These grenades were distributed among the Dublin Brigade units at 9/- each, actual cost of manufacture. Each Company through its battalion paid Brigade Headquarters for its supply and there were never any grenades in stock.

When grenades were finished in shop, they were taken by Tom Keogh to a room in a house in Dominick Street where they were charged and firing sets made up. The explosive used was gelignite and Tom was the only man I ever met whom the handling of gelignite did not affect. Neither was he affected by the fact that he worked all day alone in a room with detonators and gelignite all round him.

When he was not engaged filling he would come to the shop and give me a hand cutting up the sheet iron for levers which was a laborous job. We were all pals in the strictest sense of the word working hard with only one object.

The grenade when made was for use in Dublin. The shell was no larger than a large duck egg and with firing neck attached could be covered by a normal hand. One could hold it in their hand in a trouser pocket with ease and it was admirable for its job.

The firing set consisted of a cylindrical casting with enlarged base, projection at top to form a P. The "P" projections were on one side of cylinder with space between and slots in top to receive lever which engaged in striker passing through small hole in top of body between projections. Striker when pushed down cylinder compressed spring, slotted end of striker passed out of cylinder, lever engaged it and a safety pin with ring attached passed through P projections outside lever holding all in position with spring compressed. The ignition and detonating set consisted of a small cylindrical plug or anvil as we termed it, with small hole in centre into which was pressed a morris tube cartridge with bullet and cordite extracted, a length of fuse being substituted and a detonator being crimped on other end of fuse.

A small hole was previously drilled in edge of morris tube casing alongside cap to act as gas escape, as we found without such, the fuse would be blown out of case resulting in either a misfire or premature explosion.

Morris tube was selected for the reason that it was easy to make a gas escape in it and was centre fired, whereas with rimfired 22 more cases were exploded than drilled in process of producing gas escape, with additional labour in making striker.

Morris tube seemed to present no difficulty to Q.M.G. in procuring as during my time there was never a shortage.

It was commonly used for miniature rifle range practice and is still so used by Army in Service rifle with Morris tube.

Thus the striker used had a point for centre fire.

The fuse and detonators used was the ordinary commercial type commonly used on quarry work.

Unlike the Mills grenade it was straight and its time was 4 seconds against 7 seconds for Mills.

To bend fuse and preserve continuity in Powder train as in the Mills was beyond our power, hence pattern of grenade as against Mills.

The shorter timing was important as one could not be thrown back as could happen to a Mills at the close quarters at which engagement took place in city.

When the Auxiliaries went into the cages the time was cut to 3 seconds and many grenades burst on cage and it was generally rumoured that the I.R.A. had hocks on the grenades that caught on wires. This was not so although strenuous efforts were made in 1920 to produce an impact/^{grenade} without success.

The short timing alone was responsible for the effectiveness of grenades used by Dublin Brigade against Auxiliaries.

The procuring of materials for manufacture in early stages presented a certain amount of difficulty. Morgan crucibles had to be obtained, foundry coke, scrap iron, pig iron and moulding sand springs. The lathe which had previously belonged to Messrs. Ganter's, jewellers, and commandeered by British authorities for use in shell factory,

where it was installed, was procured by Mr. Ganter making application for its return to him, his request being acceded to. He sold the lathe to Brigade, thus it went from British Munition factory to I.R.A. factory as indeed did many other tools in later years. The intelligence of Dublin Brigade was used to full when any item was needed that presented a difficulty in procuring in the ordinary way. A questionnaire would go out through Brigade for information where goods could be obtained or personnel who could obtain them.

In this way the Director, whose duty it was to obtain factories' requirements, was put in touch with many people - business and lay - who proved invaluable in maintaining supplies.

Tradesmen employed in engineering businesses supplied manufacturing tools and in this regard Joe Furlong, who was a Turner in toolroom at Broadstone Works of Midland Railway, gave invaluable help in making and supplying special tools such as drills, taps and lathe tools. This was done with the knowledge of the Foreman, Dick Walshe who I later was able to get personally interested in our work, and without his help I doubt if the munition factories would have reached the degree of efficiency they did as a mass producing concern, all paid for by Midland Railway. Thus Mr. Monbrum of G.E.C. helped in procuring foundry coke at a time when we were hard pressed for same.

Mr. McQuillan, Capel Street, kept us fully supplied with springs. These were ordered and imported by him in long lengths which were cut to required size in shop. Ordering long springs removed suspicion which might apply to large orders of length suitable for grenade use, that is, of course,

if British were watching imports, but anyway we gave them credit for that much intelligence and set out to deceive them.

For strikers which we originally made from $\frac{1}{2}$ -inch round bar we substituted $1\frac{1}{2}$ " x $\frac{5}{16}$ " iron rivets. These could be had in unlimited quantities and all that was needed to finish same was to turn round head down to point leaving small shoulder to bear against end of spring, then cutting slot for safety lever on other end and striker was finished. Supplies of pig iron were not so secure and were obtained in many ways both by raid and otherwise. Scrap metals presented no difficulty, but without a proportion of pig iron would be impossible to machine owing to hardness on re-casting. However, Director in one way or another succeeded in supplying all needs. Thus the monotonous work went on from day to day and it can become very monotonous and laborious for a person to be doing the same thing every day and the only thing that kept us up to pitch was the knowledge that we were doing it for Ireland and our comrades in arms.

On two occasions in 1920 our monotony was relieved by a visit from G. Division. Due perhaps to the white cloud that weekly wiped out Parnell Street, the G. Division must have become curious as to what was going on in 196 Parnell Street. They therefore arrived in force one day and examined the premises thoroughly. Their steps entering the shop were audible to us in the basement and they were so numerous that we immediately suspected it was something unusual, so without waiting for signal we set to clear all trace of our work. Grenade shells were dumped and moulds ready for casting broken up. This work was progressing according to plan when danger signal was received.

They examined shop portion first thus giving us underneath sufficient time to complete our work, put out our warning light which was controlled by two way switching and engage ourselves in harmless occupation.

Matt Furlong had a cart wheel axle box in lathe on which he was engaged boring. Tom Young continued his work on moulding bench on bomb necks, this being of such a shape that to an inexperienced person it would pass as the body of cistern ball cock and as such it was described and accepted as harmless commercial goods.

The forge fire was lighted and Sean O'Sullivan was engaged blowing bellows while I was shaping a piece of flat iron into bracket, heating it in fire and bending in vice. Grenade cases, etc. were in bottom section of bellows and only added additional might to that section for Sean to operate it. Detectives duly came down stairs and thoroughly examined everything and departed satisfied that we were harmless people.

Some short time afterwards a raid took place on Collinstown aerodrome and we were again visited by G. men accompanied by Army officers in mufti. Joe Lawless must have been the suspect. The actions of previous raid were repeated and the only thing so far as we were concerned that appeared suspicious to raiding party was a small coil of black electric cable which one of their members described as fuse. He was, of course, told it was too heavy for that purpose as fuse wire was much lighter. This was the only indication we had of their suspicions which they were again unable to confirm, and left. We heard them leave the shop and shortly after they departed O'Reilly rushed down to tell us that Joe Lawless had been arrested by them and a parcel of stuff

was found in shop. This parcel transpired to be verrey lights that had been taken in raid on Collinstown.

We immediately cleared premises of all incriminating materials and reported to headquarters. We were complimented for our actions throughout and it was decided to cease production and await result of Joe's arrest.

Joe was held only for interrogation and released and headquarters was satisfied that they (the British) had no knowledge of our work and it was safe to resume. The work continued under Mick Lynch until September 1920.

The Brigade having previously taken our premises from Joe Lawless, Archie Heron having left some time before, G.H.Q. then took over from Brigade, Mick Lynch going to Fingal Brigade and Peadar Clancy appointed G.H.Q. Director. Before Mick left he had given Matt Furlong sketch of trench mortar with instruction to proceed and manufacture. The sketch was by no means a good one; it was of barrel only and the shell was described as a cylinder with projection at end for reception of 12 bore shotgun cartridge, this projection being perforated to allow propelling gases to escape into barrel. The barrel was 2' 6" long, closed at one end into which was fitted a pointed plug with $1\frac{1}{2}$ " ball on outside. This ball rested in a metal plate on ground and barrel was supported by bipod attached, standing at 45° or by straightening or extending bipod altering elevation as desired. This was an experiment again.

The shell designed by Matt was a pure cylinder with a raised ring top and bottom machined to slide easily in barrel. At one end was a smaller cylinder with drilled holes and machined round to receive 12 bore shotgun cartridges with shot

removed and fully charged with powder. The ignition or firing arrangement was a small cylinder with large boss at one end to screw into end of shell and through which striker extended with spring on outside and large cap on end of striker. Striker was thus held out to full extent. In other end was screwed anvil same as used in grenade firing set with morris tube cartridge case and detonator attached. Thus if there was a successful strike the explosion would be instantaneous on impact.

In October, 1920, the Mortar was ready for trial. A site was selected in County Meath and on a Sunday in mid October, Matt Furlong, Peadar Clancy, Tom Young, Sean O'Sullivan and myself proceeded to the trial ground. First a number of dummy shells were fired same weight as live shell, 11 lbs; first to get range of gun and amount of augmenting charge required for say 100 yds. In conjunction with these trials the firing set was examined for performance and all were apparently successful strikes. Matt Furlong, of course, was operator at all times. When shell left gun it mounted into the sky turning over and over and it continued that motion until it buried itself in the earth. Some struck the ground correctly on striker cap and fired Morris tube cartridge, while others struck broadside with cap fired. Whether the shell struck the ground correctly or not the cap was fired and this affected me considerably but did not seem to affect Matt at all. The augmenting charge used was ordinary black gun powder and each explosion left its tarry deposit on gun barrel. Thus when we came to fire live shell, the shell stuck in barrel short of firing point as the shell was just dropped into muzzle, its own weight bringing it to bottom and firing point. A number of attempts were made without success and as we had no materials or means of cleaning

barrel, experiments were stopped for that day. The refusal of live shells to leave gun was the general topic on the return journey to the city. To me it appeared providential and I insisted that someone was praying for us. I annoyed Matt so much with my persistent theory that the shell would have exploded in gun that he agreed to my suggestion to drill firing pin outside plug and insert copper shearing wire in hole in pin. My theory proved correct in our next trial which took place near Kells, County Meath.

The testing site was chosen by Sean Boylan, Dunboyne, and there were a number of Meath men present. The same procedure as at first trial was adopted. The shearing pin proved to me its worth as only shells that made a direct on hit had fired ignition cap. In cases where shell dropped broadside caps were intact.

After a number of trials Matt decided to fire live shell. This he did on two occasions when shell left gun but failed to explode when it struck earth, returning to gun with unexploded shell. Matt and I discussed failure. Matt insisted that shearing wire was the cause but I argued that the shape of shell was the cause and that the shell would need to be weighted at firing end to cause it to make a vertical descent. However, Matt, who was a very strong willed man, said he would remove shearing wire and fire again. I begged of him not to do so or if he did to do it by means of string or in some way drop shell into gun from cover. Matt would not give in and our first words of disagreement were spoken. He accused me of being windy and ordered me away from himself and gun. There was nothing left for me to do but obey and I was only a few paces from gun when he dropped shell into barrel with shearing wire withdrawn.

There was a muffled explosion and a rush of air around me with the swish of passing shrapnel in the air. I turned around. The gun had disappeared and Matt was lying on the ground. I ran to him, poor fellow, and although not killed the whole left side of his body was a frightful sight. His left foot was practically severed from his leg and was lying at right angles to it when I reached him. He was fully conscious and his first question to me was, "Is the gun alright"? I assured him it was. Moving him caused him intense agony so we procured a door and laid him on it. After a time a Doctor was procured and he proceeded to plug the wounds in his buttocks to arrest bleeding. We covered him with over-coats and blankets and did everything possible to keep him warm. Peadar Clancy went to the telephone and called for an ambulance from Dublin. This duly arrived and he was conveyed to the Mater Hospital. Peadar Clancy accompanied him in the ambulance and we were all very concerned for his safety as curfew was in force at this time in the city, but I expect the ambulance men left Peadar at his lodgings in Gloucester Street. He was then stopping with Sean Fitzpatrick, the house in which he was later arrested. The remainder of the party stayed in house with Meath men until morning and then came into the city and we returned to our work.

No. 198 Parnell Street was in deep sorrow that day. Peadar arrived and told us that Matt had his left leg amputated and there was a chance of recovery. He asked me to meet him at 4 o'clock at Republican Outfitters, Talbot Street, to go to the hospital to see Matt. I arrived at Talbot Street on time and in time for raid in which Sean Tracey was killed on the footpath outside the shop. On entering the shop I noticed a few suspicious characters

outside, one being actually at the window. I told those inside - Dick McKee, Joe Vize, Sean Tracey, Cruise, etc. - that I thought the shop was being watched. Mick Forde, Peadar's assistant, told me I was to wait for Peadar. I conversed with those in the shop and repeated my suspicions that the premises were under observation. I offered to leave the shop while those inside could see from behind curtain what action the fellow standing at the window would take as I passed him towards the Pillar, intending to return immediately to meet Peadar. I had just reached the Pork Butcher's shop next to Clancy's when a military lorry met me and halted outside the Republican Outfitters. Soldiers jumped out and almost immediately the firing started. I saw Sean fall. I proceeded towards the Pillar and stood at the corner of Earl Street watching all that was going on and after a time to my amazement I was joined by Dick McKee who had escaped during the turmoil.

I told Dick my business and he said, "Come on up to the Mater Hospital; there is great activity around there and I am expecting an ambush there. We'll go up and see how things are going on". He told me Matt was dead and police and military were looking for Dan Breen.

Joe Vize, Matt and I lodged in the same house, 70 Seville Place, which was a regular arsenal with bombs and guns as we intended as ordered to resist arrest if such were attempted on a night raid. I had moved to Matt's lodgings in April previous as I had been twice arrested in Pleasants Street and released as harmless, but I thought it was time to move after the second episode.

I was pretty well established as John Kiernan and could fully identify myself. Fortunately for me on both occasions

of interrogation I was never asked where I worked. I would have been properly sunk if such question was put.

Dick ordered me to have the house cleared of all stuff and told me to take it to the dump at Mountjoy Square, giving me the name and address of men in Oriel Street who would help me, also advising me to get out myself as it was no longer safe with Joe Vize arrested and Matt dead.

I did all Dick told me and changed my lodgings that night to Dolphin's Barn Street to friends I knew named Doyle's whom I frequently visited previously. Matt's funeral over, Dick appointed me to his position, taking me out and introducing me to suppliers with whom I would have to do business. Anything ordered by me would be honoured by him. O'Shaughnessy in McQuillan's and Mick McNulty in McNulty and Bainsfords, Capel Street. Mick proved later to be an invaluable asset to department.

The loss of Matt Furlong and gun proved a severe blow to Dublin Brigade and I.R.A generally. The possession of such a gun by the I.R.A. would have given war an entirely new aspect. The Dublin Brigade could have easily shelled British positions in a 'hit and run' style by mounting gun on a small lorry. It does not require much imagination to realise the effect such attacks would have had on positions and personnel. It would also assist materially attacks on barracks throughout the country; however, it was not to be as Peadar seemed to have lost faith in our ability to produce a trench mortar and the matter was never again raised although I was prepared to go on. He asked me to concentrate on increasing grenade output. When he came to department he brought with him a young man named Gabriel McGrath who worked with me at bench and I procured a turner named Jim Coughlan to replace Matt at lathe. I was free now to employ any means I wished to lighten labour and increase production.

I produced a small shears to cut lever from sheet iron and arranged with supplier of sheet iron that it be supplied to us in cut lengths wide enough to produce a lever. The shears thus cut the levers in one stroke and all that remained was to straighten them out and finish arms and top of cross. This proved a great saving in labour and speeding up of production. Thus I had a special chuch made for lathe to receive shell. It contained whole shell and centered shell in lathe head for boring operation by tightening chuch front on shell. With a special boring reamer and tap combined I brought the boring and tapping of shell hole to one operation which could be done in lathe, thus cutting out hand work and reducing time taken to complete job.

Other improvements which I later made could not be done in Parnell Street through lack of space and machinery.

The foundry was equal to 100% increase and in less than a month this was achieved all round. Tom Keogh now needed help to keep pace and Mick Keogh was brought in, although no relation of Tom's the Keoghs were not allergic to gelignite and Mick became as efficient as Tom in a short time.

Peadar next introduced to me drawings of a small sub-machine gun of German origin to report on possibility of manufacturing same. After careful examination of drawings and detailing machines necessary for its production I told Peadar it was possible to do so, but not in present premises or with present plant. I gave him full report of plant necessary for its production and he set out to obtain premises. I had already consulted with Dick Walshe whom I had succeeded in interesting himself in our work.

Joe Furlong had left Broadstone and gone to Supplies Department and Dick Walshe had thrown in his all with me.

He agreed to make all gigs necessary for production of gun and assist me generally by manufacturing special tools necessary for its production. Peadar succeeded through Jackie Dunne, Q.M.G's Department, in contacting an Englishman who had a small engineering shop in Luke Street. He was not doing too well in business and was agreeable to sell his interest to us if the landlord agreed to accept us as tenants. Jack Dunne introduced Peadar to this man as John Keane while I was introduced as P.J. Keane, his brother, whom Peadar was starting in business. Agreement was reached re purchase and the landlord was then approached; he lived in the house next door to the workshop. The workshop was entirely suitable having two floors of decent dimensions and if it was the landlord was also very suitable to us as he was an R.I.C. pensioner and beyond suspicion.

He agreed to accept us as tenants - we looked decent - and so long as we paid our rent we would be undisturbed. To fully satisfy him we agreed to have a legal agreement of tenancy drawn up and he agreed to accept our solicitor to do the whole job, our solicitor being P.J. Duggan who then had an office in Dame Street. Everything was arranged and as soon as the agreement was ready and signed we took possession. During the preparation of the agreement Peadar was arrested in Fitzpatrick's and murdered in Dublin Castle, thus he was with us barely two months but great progress had been made in that time.

On learning of Peadar's death I went to Headquarters for orders as to whether premises should be closed for a time or that we carry on. The Adjutant-General, Geroid O'Sullivan, then gave me an order to carry on and fight. He told me where to obtain side arms for members of staff and devise any plan I thought fit for defence of premises, promising if attacked

that the A.S.U. would come to our assistance and help us escape.

No. 198 Parnell Street was now a regular arsenal and no further attempts at concealment would be made if a raid took place. Fully loaded grenades were kept on the premises, an armoured plate was fitted behind the counter front in shop with loaded revolver and grenades under the counter. There was no rear exit from premises; the yard was bounded by a high wall adjoining premises at rear: in an organised raid one might expect that wall to be covered.

In the event of a raid the boy in the shop would take cover behind the counter and open fire on force entering and if possible throw grenade at door or through window on which signal men in basement would run upstairs to dwelling overhead and attack raiders with bombs and small arm fire, and when opportunity offered boy in shop would join them.

It was hoped that the A.S.U. would come to our assistance and under their covering fire staff would escape from premises. If we did not of course we were well aware of what to expect if Auxiliaries captured us and it would probably turn into a fight to the death. However, we were confident that we could outwit them and under these conditions continued our work. I continued and completed negotiations for taking possession of Nos. 1 and 2 Luke Street as new machine shop. I told Mr. Kilmurray, owner of premises, that my brother had gone to England to purchase machinery for me and that I did not expect him back for some time and as the agreement was ready for signature I would sign it.

When we arrived at P.J. Duggan's office the Auxiliaries were in possession. I told an Auxie in the hall our business

and asked to be allowed to see Mr. Duggan or his chief clerk. Mr. Duggan, of course, was not on the premises and we were allowed to see his clerk who told us that all papers were being removed to Dublin Castle, our agreement included. He said he would make application to the Castle for its return in due course and when he received it he would let us know. I asked him how long that would take, as I was anxious to get going in business and was expecting machinery any day. He thought that the absence of the agreement might not prevent Mr. Kilmurray from giving me possession and it could be signed later. Mr. Kilmurray agreed and I got from him the key of 1 and 2 Luke Street.

A week or so later, December, 1920, on an indiscriminate night raid on dwellings over 198 Parnell Street shop the Auxiliaries accidentally discovered our one and only working munition factory. They remained in possession and lay in ambush awaiting our arrival on Saturday morning. The first men to arrive were Tom Young and Mick Keogh. Tom was in the habit of buying the newspaper in the shop next door to 198 and duly arrived there to be told that the Auxies were inside his premises. Tom posted himself in Denmark Street to warn others arriving. Mick Keogh also had a habit of having an early morning pint and while taking same was told by curate of great capture made by Auxiliaries further down street. Mick posted himself in Parnell Street, moving up and down, to warn anyone coming in that direction, including myself. A young boy called at the shop on cycle for the loan of a pump, practically the only kind of customer we had outside Liam Beasly, and when he met the Auxiliaries he immediately jumped on his bicycle and charged off. The Auxiliaries rushed into the street, firing after him and thus their ambush was disclosed. The usual Dublin crowd was not long in gathering we mingling with the crowd watching our beloved premises being dismantled.

The British reports can be found in newspapers of the time in the National Library. Its capture was a mild sensation but the escape of the staff annoyed the Auxies very much, threatening that if they ever captured any of those fellows they'd burn them in oil.

Headquarters was without a factory but had Nos. 1 & 2 Luke Street. The sub-machine gun was forgotten and the order from the Q.M.G. was 'get going as soon as possible again on grenades'.

The only machinery in Luke Street was an antiquated lathe with a more antiquated oil engine as motive power. Then without a foundry regular grenades were out of it. With the old gun-barrel grenades in mind I purchased a quantity of gun barrel fittings, i.e. reducing sockets and ordinary sockets. Two reducing sockets joined together with thin nipple formed a grenade case or ordinary G.B. sockets plugged at one end with firing set in other made complete bomb. The sockets were ringed around in lathe and nicked on length with hacksaw cut forming serrations for fragmentation.

Improvised bombs such as these carried over interim period until foundry was re-established and normal production resumed. Without a foundry the production of firing set bodies caused some worries, so I changed their metal from brass to aluminium, this metal being easy to melt in an ordinary open coke fire proved its worth and got over difficulty.

Scrap could be obtained from any of the scrap merchants, so Tom Young set up his improvised foundry in Denzille Lane in premises owned by Paddy Daly and Jack Dunne. Daly and Dunne were General Contractors. Tom cast firing set bodies here which were machined and finished in Luke Street.

As I stated the motive power in Luke Street was an old unreliable oil engine and much time was lost in starting it and keeping it running, so I decided to have electric current laid on and made necessary inquiries to the Dublin Corporation electricity supply, to be informed that the nearest cable to my premises was in Tara Street. They were willing to lay on supply provided I paid cost around £150.

Grenades were going to cost money. A suggestion was made to me that if I could induce a Mr. Hamilton, who had an engineering business in Poolbeg Street and whose premises adjoined mine, to take an electric supply and allow entry from his premises to mine, the cost would be considerably reduced and both would benefit. I duly approached Mr. Hamilton who agreed to the arrangement so long as he was at no expense. He accepted me as a genuine business-man and being a hard-headed North of Ireland man proceeded to sell me machinery which was sorely needed to carry out plans in mind. The entry to his premises was less than half the distance from Tara Street to mine; inside his gate supply was taken overground and through to my premises. During these negotiations my adviser and helper was Sean McGarry who had an electric business in Fleet Street. He was also a member of Dublin Corporation and in a position to push matters ahead with the least possible delay, and removal of all delaying preliminaries. He wired my premises for power and light and was ready to connect when the Corporation had power laid on.

I availed of Mr. Hamilton's offer to sell me machinery and I bought from him two capstan lathes, an ordinary lathe and drilling M/c and grinder.

He had a great respect for me. I had given him an electric supply for nought and bought his M/Cs which were all war surplus. He was particularly interested in the type of

business I intended doing, fearing I might cut across him. I assured him he might have no fear as I was particularly interested in the manufacture of finished bolts and nuts and if ever he required any he might let me have his order. The machines I purchased from him were suitable for the work I mentioned but he doubted if I would make it pay. However, he was deceived and his machines were admirably suited to my work and if he had given me an order for finished bolts I would execute it with good English finished goods which I had in stock as camouflage.

This shop was finished in January, 1921, and ready for any work that a foundry when established could produce. Towards the end of January, 1921, Sean Russell was appointed D.M. The delay in appointment was due to the endeavour to find a suitable person, and I feel sure through my refusal to join the I.R.B. I was personally debarred. This is only an opinion but I could not help but feel that I was not as well received by people who counted as I was before refusal. My refusal did not affect Peadar Clancy; neither did it affect Sean Russell whom I welcomed and promised him my entire co-operation. Sean and I got on well together. Our ideals were identical and although he had little technical knowledge of work in hand he left the production entirely to my discretion and always introduced me as his assistant and appointed me as his deputy whenever he was absent. I informed him of our requirements re foundry etc., and expressed the view that we should, as far as possible, scatter our work and duplicate premises so that we should not have recurrence of Parnell Street. I outlined my plans for production, promising if I got all my requirements I could produce 1,000 grenades per week. Sean set too and in a week he had obtained premises in Crown Alley suitable for foundry.

Tom Young at this time had gone over to the Quartermaster-General's staff and we were without his service and although we had a young man, James Hughes, a moulder, he had not Tom's experience, nor was he as versatile, but he was a good worker under direction.

Hughes had been engaged by me in 1920 after Matt Furlong's death to assist Tom Young in the Foundry on increased production drive. He had been sent to me by the O.C., Louth Brigade, Sean Gormly, asking me to help him along as he was wanted in Louth (Dundalk) for shooting a Black & Tan in street ambush. Therefore, I took him on to munitions when his services were needed.

With Sean I inspected premises owned by Mrs. Baker facing Telephone Exchange which was under military guard. Mrs. Baker was running a small engineering and blacksmith business with her son, Paddy, in charge and a younger son in office. The premises suited our needs and she agreed to allow us more space in the general machine shop which we could partition off for machining grenades. In my previous quest for machinery I saw two machines in Yodakin's on the Quays which I considered admirable for adoption for boring and screwing grenades cases. I procured these at £5 each and set up one in Crown Alley, Dick Walshe making case chuck for same and special boring and tapping tool. In one operation the case could be bored and screwed at about two per minute, thus outstripping lathe and hand work. While the erection of this plant progressed a furnace was erected in other room off main shop. But try as we might we were unable to produce sufficient heat to melt iron. I discussed our failure with my good friend, Dick Walshe, and requested him to make arrangements that I see furnaces at Broadstone Works

in the hope that I might see where we were lacking. He told me their furnaces were gas operated. I told him I was still interested as such furnaces if they could melt iron would solve two problems for us at once. I saw furnaces in operation and was introduced to Frank Gaskin who was a moulder and furnace operator and it was easy to understand if coke under certain conditions would melt iron how much easier it was to do so with coal gas under pressure with correct amount of air mixed for combustion. With them the necessity of storing quantities of furnace coke which was in itself difficult to obtain and disposal ashes etc., was eliminated.

I got full particulars of furnace maker's name and a promise from Frank of his help in installing same. This information I passed on to Sean Russell with a recommendation that we purchase two of these furnaces and that Mrs. Blake make application for necessary gas supply to Gas Company. On assurance that Gas Company could and would lay on supply two furnaces were ordered through Brooks Thomas again through the assistance of an I.R.A. sympathiser employed there.

During the intervals of waiting for the delivery of furnaces gas was laid on meter installed and site excavated and brick built ready to connect and receive furnaces on arrival. Early in March furnaces arrived and were installed, Frank Gaskin supervising installation and lining of same with refractory brick setting up of gas and air compressor and mixer and connection of supply. Frank was then induced to leave railway and supervise foundry which he did. In the middle of March the foundry was in production.

Methods entirely different to those employed at Parnell Street were introduced to hasten production.

Small moulding boxes originally employed were discarded and the snap flask system used. Thus two boxes only were needed in which to do all moulding. When moulding was complete it only remained to place mould on floor; box could be removed from mould leaving mould intact on supporting Board. By having supporting board exact width of mould, moulds could be moved and placed end to end supporting each other, long boards placed outside completed support for casting. This system allowed for large production in small space and was highly successful. Patterns also were changed and instead of the single dumb bell pattern for two grenades, 8 half grenade patterns were accurately fixed on each side of a machined plate with core prints between.

This plate fitted accurately pins and holes in snap flask box and each half of mould could be instantly filled cutting time on moulding operation to almost half. This foundry could produce 300 shells per 8-hour day. Two core makers and two moulders employed, this was progress, with two furnaces going they could have three castings in a day, but the firing bodies had also to be cast. Its normal work on cases was around 32 moulds of 8 shells each per day with a day for casting necks, thus in a week it produced over 1,000 cases and necks. The cases were all machined in small partitioned portion of main shop previously mentioned and left foundry to go direct to filling depot.

The method of casting firing set bodies was simplified. Metal dies or moulds were made by Dick Walshe into which molten aluminium was poured by ladle, thus cutting out sand moulding entirely, producing a better finished casting ready for screwing and with little machining. It had, of course, to be bored and tapped internally.

Again Dick Walshe made these moulds or dies.. Two dies were in use at the same time and as aluminium set very quickly operator could make about 40 casts per hour. A few hours casting would meet requirements for a week's output.

Mrs. Baker had in her main shop a power driven shearing and punching machine, also a lathe, one of which her men worked for us.

Dick Walshe made punch and die to suit punching machine for punching out safety levers from sheet iron strip. Shears cut large sheet into required strips. These strips were then fed through safety lever die and were punched out at 40 a minute. He also made a gig for slotting strikers. This consisted of a disc which would receive around its perimeter about 18 rivets, small clamps between each pair of rivets when tightened held rivets in position, discs and rivets turning in lathe a special shaped tool cut slot. 18 rivets slotted in 4 or 5 minutes. Levers were punched by Mrs. Baker's staff. One of munition staff on strikers.

None of Mrs. Baker's staff were in I.R.A. and it is a great credit to them that the presence of foundry and work done there was never disclosed to anyone.

Work continued in these premises until taken possession of by Free State forces in March 1922.

Mrs. Baker, too, deserves great credit for the risk she took. She was not a young woman but had a great national spirit. Ireland's soldiers needed help and she did not count the risk or cost, and was always in the best of spirit. Few women with a military guard facing their premises would take such a risk.

The foundry could be entered from Mrs. Baker's shop and there was a gate as exit to street with small yard inside. The carrier could take his pony and cart inside, load up and drive out, while staff entered and left with Mrs. Baker's staff. Finished grenades were brought direct to O'Rourke's Bakery, Store Street, where all filling was done. Firing set castings were delivered to 1 and 2 Luke Street where machining and screwing was done. Strikers were taken to Percy Place for pointing; safety levers were taken to Mountjoy Square where assembling of firing set was done.

The machines in Luke Street consisted of two capstan or one small, turret lathes, one large engine lathe and one small drilling machine and grinder. The principal work in Luke Street was machining of firing set body. This was done in capstan lathes in three operations. The body was held in special collet chuck, that is a spring chuck which closed on end of body and held it tight in lathe head. A centering tool held body to true centre at time of closing chuck, turret was turned and special drill bored spring and striker hole in one operation. A screwing head was then presented and with tap set in centre external and internal screwing was done in one operation. Where screwing head had screwed the set length of thread it automatically opened, direction of lathe head was reversed and body unscrewed itself off tap.

The two lathes would finish about 250 bodies per day. In addition to machining lugs were slotted for safety lever and safety pin hole drilled. This too was done in gigs on drilling machine. Thus every item produced was identical. The finished part was taken to Mountjoy Square for assembly.

In addition to this work, small hand boring machines were made for country units who were casting their own shells or

they could obtain surplus shells and firing sets from headquarters. By doing their own screwing, grenades came cheaper to them. This work was done by men who had done a course of training in 198 Parnell Street during 1920. Therefore, a country unit that could produce or bore and screw its own cases could get finished firing sets from headquarters. The special boring and screwing tool for grenade cases had been made in quantities for headquarters by John O'Neill, Pleasant Street, who was then manufacturing the Lucania cycle. He had a most up-to-date machine shop and tool room and when placing the order I knew his capabilities as I had worked in his tool room, no excuses were taken. It was an order.

Percy Place machine shop was small and contained a small turret lathe and a small engine lathe and grinder. Here the strikers were pointed and the part known as the anvil was made. The anvil held the firing cap fuse and detonator. It was a short piece of round brass screwed on the outside with hole in centre into which fitted Morris tube cartridge. It in turn screwed into tail of firing set body when grenade was being prepared for use.

The preparation of these shops had gone on during the time of waiting for gas furnaces to arrive and when furnaces started producing, work went on apace and in three months after Parnell Street had been captured we were producing not 150 but 1,000 grenades per week. I had fulfilled my promise to Seán. But without Dick Walshe's help and work in his tool room at Broadstone this would hardly be possible. Although my time was spent in planning he produced the means of carrying out the plan in small tool and gigs with the minimum of effort to me. I might say that

anything that was in Broadstone works that I wanted I only had to ask for it.

Dick was not a Volunteer. The work he did was only to Sean and myself and I felt pleased when headquarters acceded to my request to present himself and Ben Allen with gold Albert and pendant inscribed, "Presented by General headquarters I.R.A. for services rendered". I would venture to state that these are the only two such mementoes in the country. Both men are now dead and their relatives perhaps may one day present these to National collection in Museum.

A carrier was whole-time employed transporting parts finished and unfinished from one depot to another. Each shop was cleared daily and everything human was done to ensure that a night raid would not again put us out of business. Faked account books were kept and stocks of materials to camouflage premises. Secret dumps were made to conceal anything that might not be cleared and their construction I consider only right to keep to myself, for who knows whether a similar struggle may not take place at a future date or Ireland's sons may have to pit their brains against an invader. However, those we constructed stood the test, as Luke Street was raided at night by Auxiliaries and passed by them as genuine business premises. On the same night a number of engineering premises were raided, no doubt in an attempt to locate munition shops. Our carrier, Healy, lived in Luke Street, and while he knew that the premises had been raided, he could not say if an ambush was laid. He was out in the early morning after the raid to warn us and it was in fear and trembling I put my key into the lock and entered the shop to find it entirely ransacked but dumps secure.

On pre-arranged signal remainder of staff entered and we set to immediately to clear shop completely and engage ourselves on machines on commercial work fearing a return visit, continuing so for a few days and to work again. This was the only occasion our work was disturbed until the Free State evicted most of us in March 1922.

Before the Truce, July 1921, there was a scarcity of .303 ammunition. Sean Russell asked me if I could possibly do anything about its manufacture. I said given the tools there was no reason why we could not produce it. I asked Dick Walshe to experiment in his shop on drawing out some copper discs. A .303 cartridge case is produced from solid copper disc and drawn out to shape through dies. There are a number of operations and an annealing process of metal between drawing operations as copper when drawn becomes hard and brittle. Dick Walshe fortunately had articles on complete process and succeeded in drawing out case in his tool room. I reported to Sean and told him machines required. At this time the British were holding in England disposal auctions of surplus war machinery plant. I secured a catalogue of one of these auctions and found in it a number of challoner power presses suitable for this work. In fact they had come out of a cartridge factory. In addition there were a number of other machines lathes, etc. with which we could duplicate existing plant. Sean decided to attend auction and buy any tools required. He did so taking with him Maurice Fenlon who did the buying in his name and Jim Coughlan who examined machines to see they were in working condition. A small tipping cupola furnace motors-presses annealing furnaces and lathes were bought cheap and brought to Dublin. Maurice Fenlon took them into his stores at Coleraine Street, keeping them there until needed. A premises was

obtained in Vicars Street off Thomas Street from Mr. Wright who had a butcher's shop and slaughter house there. There was an entrance to these premises from Thomas Street and another from Vicars Street and it became known as Vicars Street shop. The erection of this shop and installation of motors and machines was done during Truce. Another shop was erected in Mitchells' Bead factory in Waterford Street. Vicars Street was intended for work similar to that done in Luke Street and production of .303, while Waterford Street was intended as small foundry and machine shop.

Both shops were complete and ready for work when Free State took over. The presence of Vicars Street was known to State Forces but they ^{had}/no knowledge of Waterford Street. Sean, as a G.H.Q. officer, had full knowledge of what was going on in London and decided to keep Waterford Street secret. It worked well into Civil War when it was captured by Free State forces.

Thus the general work continued during Truce as well as the extension of premises.

It will be seen from the foregoing the great advance that had been made in the first six months of 1921 and the continuing progress up to March 1922 when plants, with the exception of Waterford Street, were taken over by Free State.

On Friday previous to signing of Treaty Dick Mulcahy inspected factories for first time. I met him at Luke Street and was introduced by Sean Russell. He questioned me generally on work and asked what precautions were being taken. I told him none as we were working under Truce conditions. He told me I should immediately return to war conditions as it was expected that negotiations would break down on allegiance question. I said I would do so and was again on war footing

when signing of Treaty was announced.

Our years of hardship and worry to me had been in vain. I had my mind made up and so had Sean Russell. I would never give my allegiance to a British King or have anyone do so on my behalf. The time between January and March was anything but pleasant. Men who had worked side by side in the greatest harmony, ready even to die for each other, were arguing and squabbling about the merits and demerits of the Treaty. Some could see no harm in the oath and others who upheld its sanctity were called Die-hards by their own comrades.

The enemy had surely done with the pen that which he could never have done with the gun. The division was not by any means an equal one, only a minority stood for the Treaty, but still they had taken the reins of office and their obtaining of support is not a difficult thing when you can hire servants, human nature being what it is, no matter what the cause.

In March, 1922, the workshops were taken over by Free State by force; those who cared to could remain on under Joe Furlong; those who would not were evicted at gun point and guards were placed on premises. All finished and unfinished goods were taken possession of, the only plant left to the so-called Irregulars being that in Maurice Fenlon's store and Waterford Street premises.

The machinery at Coleraine Street was removed by Sean and I and loyal staff to Maurice Fenlon's house at Vernon Avenue, Clontarf, so when State forces thought of taking possession of it they had not a bolt to take away in the lorries they brought to clear it out.

Thoughts were now on where we should start again and Sean Russell and I set out through country to see what progress, if any, had been made. As I previously stated patterns, tools and

finished firing sets had been sent to many areas where I.R.A. was doing its own manufacturing in a small way. Our tour brought us to Cork and at Kiskean we saw the one and only genuine attempt at production of grenades. Some areas had been able to get limited supplies cast in regular foundries to meet their requirements. But on the whole Con Moylan of Newmarket had made the most serious effort to produce the finished article. He had a good sized cupola furnace, a good oil engine for motive power, a lathe grinder and drilling machine. Con accompanied us on inspection tour as he was then O.C., Transport, 1st Southern Division. He was agreeable to Sean's suggestion that Headquarters take over his plant and as the 1st Southern Division had possession of all military positions in Cork he brought us to Buttevant barracks to select site for workshops. This I did, selecting a building in which I could do the whole job.

All necessary arrangements were made for me to return and commence operations with the 1st Southern Division headquarters then at Mallow. At the end of March, 1922, I arrived at Buttevant taking with me Sean O'Connor (Blimey), an electrician and James Hughes, a moulder. I had also a certain amount of gear to get started and hoped to obtain anything I might require in Cork City. I transferred plant from Kiskean to Buttevant and set it up. Labour necessary I recruited from Sean Moylan's men who were in occupation. From Cork City I got turner and furnace man who had worked in one of Cork's foundries and in a short time plant was producing grenades equal to anything done before.

Hughes trained Bill Desmond in moulding and McCarthy, the furnace man, trained Bill Reardon in furnace operation, charging and tapping. In a short time I was able to work a day and night shift.

Requirements of scrap and pig iron were obtained for me by Sean McSweeney, Quartermaster, Cork City Brigade. Scrap aluminium I obtained from a scrap merchant in Cork City, moulding sand from Ford's Works and small tools, springs and rivets, from Pulvertafts. I had ample supply of cash from Headquarters to pay my way and had no difficulty in obtaining supplies.

At first the Cork men received me coolly and asked me many questions such as what are the bombs for, why make them here, etc. I replied I was only carrying out orders of headquarters and would have to report to them any difficulty I might experience in carrying out the job. The Cork men were not at this time as keenly alive to the seriousness of the position; they had experienced no opposition and had the ball entirely at their own feet. The Free State headquarters had not spread its arm that far so, while a number of I.R.A. were in uniform, there was no division of thought amongst officers. To my mind it appeared they had no idea that there might be a fight. Very few Cork officers or men had gone over entirely to Free State. When they accepted me and my mission I confess I received whole-hearted co-operation from Divisional Staff, also from O.C. Battalion, and Paddy O'Brien and His officers; Quartermaster, 1st Division Joe O'Connor, had instructions to give any cash I required and in this regard I was never short while in Buttevant Barracks.

When the Four Courts were attacked I had 2,000 grenades complete which I sent by road to Dublin Brigade. During the occupation of the Four Courts I was recalled to Dublin to set up plant there. This I did and bombs and mines were produced in the Four Courts during its occupation. In Cork I was on my own and had not to refer to Headquarters as to what I should do, so I set out to complete job on which Matt Furlong died.

All the time I had in my mind the type of shell to do the job. The barrel was easy.

Eugene O'Neill, O.C., Engineers, put me in touch with a pattern-maker named Sean O'Sullivan employed in Ford's to whom I gave my drawing of shell from which he made me pattern and core boxes. The barrel I made from an oxygen gas cylinder, the small size usually used in hospitals. By cutting off large end and fitting striker in bottle neck end barrel was complete. All it needed was base plate and bipod, a simple matter.

For setting gun I made a quadrant that could be placed on barrel. It had swinging pendulum or pointer which gave elevation at a glance. My shell was pear shaped with four vanes on tapering end continuing out to end of firing chamber which, like Matt's shell, received 12 bore shot gun cartridge. Augmenting charge was dropped in gun barrel. The vanes and machined ring around large end of shell/^{kept}shell concentric in barrel and guided shell out of barrel.

In quick time I had gun and shell ready for experiment which I carried out successfully outside Buttevant barracks. I had many spectators including Sean Moylan.

The shells left gun and entered sky turning over and over, but when it had reached its height it turned over and descended perfectly straight. After preliminary tests for range, elevation and amount of augmenting charge had been carried out with dummies I fired my first live shell. I confess I was nervous. Matt was before my eyes all the time. I dropped shell into gun. Out it went and Buttevant was startled with its explosion.

I continued manufacturing shells for gun and had a fair stock when fighting broke out at Kilmallock. The gun was used there against advancing Free State forces by Sean O'Riordan of

Mill Street. The forces opposing the State forces was small in comparison to the number attacking and the action could only be described as a delaying one. The action lasted about a week, the State Forces advancing slowly.

I was told it was intended to evacuate Buttevant and if I wished I could take out my plant. I set too and dismantled completely and obtained lorries to transport it to Cork City as directed. There I could have the best position in which to start again. I left Buttevant on the evening on which it was being evacuated and arrived that night at Royal Barracks, Cork. I was about an hour in the barracks when the alarm was sounded and my men and I were first on the Barrack square. We stood on the square for a couple of hours. I did not know any of the garrison and could get no information as to what was taking place. I decided to go to Union Quay barracks and find out for myself the position. I was told Free State forces had landed at Passage and were advancing on Cork City. There was a force meeting ^{them} there and we might retire for the night. Next morning I called again to Union Quay to be told that Cork would be evacuated that day and that Republican forces were moving into the country to carry on fight there. I could take my men and material to Macroom Castle where I would meet Cork City ~~XXX~~ Brigade and Divisional staffs. As I left Union Quay, Cork was being evacuated. I gathered my men and transport and joined the Column leaving the city, arriving in Macroom that evening. I was advised that I should move further into the country and set up my plant some place around Ballyvourney. The local O.C., James Moynihan, and local Column leader would find me premises. I was asked to concentrate on shells for gun and every effort would be made to obtain materials for me from Cork City.

Next day I proceeded to Ballymackeera where Cork I. Brigade had set up Headquarters. Arriving at Brigade Headquarters I was introduced to Paddy Donnoghue, Column leader. He took me to a place called Coole, showing me a vacant house in which I could set up plant, and arranged billets for my men in local houses. I set up plant here and got going again concentrating on shells for mortar. I worked here for some months. The Free State forces meantime extended and had marched and occupied Macroom, meeting little opposition. The Cork men were well armed as they had captured the Upnor and had large quantities of rifles and ammunition, also machine guns. But so far as I could see there was no organised plan of resistance or inclination to fight. The attitude seemed to me to be one of disgust.

Divisional staff had set up headquarters at Lackabawn, a few miles from Ballingeary and at foot of famous hill for motor trials. The first real attack on State troops was made on occupying forces in Macroom. I was invited to participate with gun and did so, accompanied by Sean O'Connor (Blimey). I got into position about 100 yards from the Workhouse occupied premises and opened attack at dawn.

I fired about 12 shells into the building from behind a large rock with what result I never learned. We had greatest difficulty in retreating from position when our ammunition was exhausted as State forces had got range from the large cloud of smoke that followed each shell. Our position was peppered with machine-gun and rifle fire and it was not until our forces brought a concentrated fire on a tower or steeple in town, that enabled Sean and I to bring our gun up a hill and into cover. An 18-pounder was brought into action in reply to our gun but did no damage as operators had not correct range.

After a couple of hours sniping our forces withdrew and the engagement ended in only a wasting of ammunition.

Another lull in activity took place and it was not until Liam Lynch accompanied by Todd Andrews arrived and attended a Divisional meeting at Sean Moynihan's house that activity was resumed.

Tom Barry formed a large column and took a village from Staters.

State Forces under Sean Hales had a lively time and had to fight a good bit of way in taking Ballynackeera. This village was later recovered by Republican forces. The gun had been used on a number of engagements and brought to others that proved abortive, but all the time I could not help myself in thinking it would have been a far more effective weapon in Dublin City had we had it against British. It would have given me ^{far} greater satisfaction for to be truthful I must say I got no kick out of opposing my own countrymen, but felt ashamed to think we were such fools to allow our ancient enemy to divide us.

After occupation of Ballynackeera by State Forces I moved plant again as I was then only about four miles from the enemy and could easily be captured by night. I moved the plant to a glen on the borders of Kerry and Cork (Knockaruddig) and again set up business in vacant house; an unoccupied labourer's cottage housed my men. With the exception of the owner of the vacant house, the residents of this glen were unfriendly; food had, therefore, to be commandeered and with the little financial assistance I obtained from Division I was able to provide a few small packets of cigarettes per week to each man. They were as often without them as with them as

allowances were few and far between. However we survived here until Cease Fire.

Meanwhile I had sent complete plans of gun and shell to Dublin and I learned later that one was actually made, the Cease Fire preventing its use. After the Cease Fire I dismantled the plant and dumped everything, vacated the unfriendly glen and returned to the more friendly territory of Coolea. Here I built a dug-out in which we slept, for in obeying the Cease Fire order we became defenceless and one soldier was sufficient to make us take cover. I remained here until June 1923 when I returned to Dublin, reported to Frank Aiken, then Chief of Staff. He referred me to Liam Pedlar, then Quartermaster General and with Liam I went to Clare as Sinn Fein organiser for the famous 1923 election at which Eamon de Valera was arrested. The square in Ennis was packed tight with people surrounded by armed military, while known members of the old A.S.U. mingled in the crowd.

If the intention was only to arrest De Valera this could easily have been done when he stepped from his car at the outside of the meeting. But I cannot help but feel there was something more sinister in the mind of the man who planned the job. He was allowed to mount the platform; the chairman was allowed to introduce him. De Valera came to the front of the platform and had uttered a few words when troops fired and rushed the platform. There was a general stampede. Many were knocked down and trampled on and a goodly number of people, particularly old persons, received some nasty scalp wounds. A braver man I have never seen nor have I ever witnessed a more cowardly arrest.

I lived as best I could until 1926 when I entered my present employment. I have no personal regrets. But I regret sincerely that the politicians of Ireland cannot find

some means of wiping out that regrettable period of our history from their minds and find some way of fulfilling the declaration they made when they joined the Irish Volunteers in 1913. To fight for the liberties common to the people of Ireland.

Failures:

There were a number of failures of I.R.A. grenades, and some writers make much use of it as a reason for their own failures. The following are some of the causes I found:

Mines:-

(1) First lack of knowledge in use of fuse if fired by fuse. All fuse absorbs moisture and no experienced person would use fuse direct from coil without first cutting off first 6 inches and then testing at least foot of remainder for rate of burning.

(2) Storing in unsuitable places. Dumps in country were usually in open country and could not be described as damp proof. Result damp fuse.

(3) Kinked fuse in which powder continuity was broken.

Any officer who blames the failure of a mine for failure of an operation should really blame himself for not seeing or making sure that his equipment was in proper condition.

Grenades:

(1) Damp fuse due to faulty storing. Fuse being so short readily absorbed moisture and if firing set was kept for any length of time in damp situation it must surely fail.

(2) Firing set spring being kept under compression in store, thus losing its elasticity and remaining in compressed state. The springs used by Munition department were only commercial goods and were not purposely made for grenades, such as that used in Mills grenade, but even in the Mills springs if kept in tension will lose its spring and prove a failure. Many were found rusted solid.

(3) Firing set complete with firing cap and detonator being left in grenade filled with gelignite. Chemical action of gelignite destroying detonator.

(4) Safety pin not withdrawn .

To my mind all failures can be attributed to carelessness or taking too much for granted. The lack of knowledge was due to lack of training officers and such things are only to be expected in a Volunteer Army such as the I.R.A. was. It could truthfully be said that everything was done under tension and with a certain amount of anxiety all due to lack of training. The marvel is that so much was done and there were so few accidents.

I have made no reference to the Chemical department which made the explosive so suited to our needs for grenades and mines, but that is Jim O'Donovan's story and if he has not already done so, he should be approached to do so and complete the story of Ireland's miniature munitions factories.

I
Herewith/give list of names of those engaged with me on this work and I would like to pay particular tribute to Dick Walshe, Maurice Fenlon, Mick McNulty, Mr. McQuillan, Ben Allen without whose unselfish help our work would not have been the success I think it was.

No words of mine could express or convey a picture of Matt Furlong, my dear friend. As for Peadar Clancy and Sean Russell, both were men of valour and courage, loving their country with an intense love. May the good God have mercy on their souls.

I cannot forget our first officer, Mick Lynch. A more genial man never lived. All were inspiring and one can look back with pleasure of having the honour to have served with them.

Dublin Brigade and G.H.Q.
Munitions Staff and History.

198 Parnell Street - 1918 - 1920,
Michael Lynch, Brigade Officer in charge,
Matt Furlong, charge of factory,
Tom Young, Moulder and founder,
Sean O'Sullivan, alias Eamon Byrne,
Christy O'Reily, cycle mechanic,
Tom Keogh, fitting and charging,
P.J. McHugh, alias Sean Kiernan, fitter and turner,
Joe Lawless and Archie Heron, owners of premises
Heron and Lawless.

September, 1920,
Factory taken over by G.H.Q. I.R.A.,
Peadar Clancy appointed director,
Gabriel McGrath) Fitter
Mick Keogh, assisting) Joining staff.
Tom Keogh.)

October, 1920,
Matt Furlong - killed in action on mortar experiment,
P.J. McHugh appointed in Matt's place,
J. Coughlan, Turner.

November, 1920 - Peadar Clancy murdered by Auxies,
Dublin Castle.

December, 1920 - 198 Parnell Street captured by Auxies.
Entered into possession of 1 and 2 Luke Street.

January, 1921 - Sean Russell, Vice O/C. II. Battalion
appointed Director, additional staff recruited:
Joe Furlong, Fitter Turner,
Martin Kelly, Capstan Lathe operator,

Tom Garrett, Lathe operator,
 James Daly, Fitter,
 Tom Roche, Fitter,
 Paddy Drennan, Turner,
 Fintan Kelly, do.
 Jim Kirby, Fitter,
 Aubrey Maynem do.
 James O'Hara, do.
 Tony Lynch, Labourer,
 Christie Kenny, do.
 Sean Doyle, Plumber,
 Peter Farrell, Turner,
 Sean O'Connor, Electrician,
 James McManus, Capstan operator.
 Paddy Hussey
 John Doyle J. McDonnell
Foundry Staff,

Frank Gaskin in charge,

Denis Holmes	}	general foundry hands.
Bill Maher, Junr.		
" " Senr.		
James Hughes - alias - Owen Lane		

Pattern Makers,

Ben Allen,	}	General Carrier
J. Maguire, Dundalk		Christie Healy, Luke Street.

and helpers:
 All above tradesmen/with the exception of Tom Young
 were working on munitions when premises were taken
 possession of by Free State 1922.

Principal suppliers of materials -

Mr. McQuillan, Capel Street,

McNulty & Rainsford, Capel Street,

Maurice Fenlon, Mary's Lane,

Dick. Walsh, Phibsboro' Road.

Workshops and location

Original - 198 Parnell Street,
 Foundry and machine shop, Bakers, Crown Alley,
 Main Machine shop, 11 & 2 Luke Street,
 Small do. do. Percy Place,
 Assembly Shop, Mountjoy Square,
 Machine Shop, Rear of Wrights, Thomas Street, known
 as Vicar Street Shop.
 Mitchells' Bead Factory, Waterford Street,
 Not in production at '22,
 Foundry Machine Shop,

Cork Staff,

P.J. McHugh alias Sean Kiernan,
 O/C., Munitions, 1st Southern Division,
 Sean O'Connor, Electrician (Dublin),
 T. Garrett, Turner (Dublin),
 Christie Owens " (Cork),
 J. McCarthy, Furnace Hand, Cork,
 W. Reardon, " " do.
 Joseph Buckley)
 William Dunne) Trained do.
 Jack Dunne) in do.
 Daniel Kelleher) Butte- do.
 William Dunne) vant. do.
 Jerm. Scanlon do.
 William Desmond do.

Signed: *Patrick J. McHugh*

Date: Patrick J. McHugh
31 Dec 52

Witness: *Sean Brennan Comdt.*

(Sean Brennan) Comd't.

