SUSSEX INDUSTRIAL HISTORY

BROOK HOUSE ARDINGLY
THE GAS HOUSE

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Sussex Limeworks – Mills of Forest Row
Machine Tool Manufacture – Brook House Estate
Mill Authors

ISSUE 23

PRICE £2.50

SUSSEX INDUSTRIAL HISTORY

Journal of the Sussex Industrial Archaeology Society

TWENTY THREE 1993

Edited by Dr. Brian Austen, 1 Mercedes Cottages, St. John's Road, Haywards Heath, West Sussex RH16 4EH (Tel. 0444 413845). The Editor would be interested to hear from prospective contributors of articles of any length. Shorter notices can be included in the Society's *Newsletter* which is issued four times a year.

The annual subscription to the Sussex Industrial Archaeology Society is £5 payable on 1st April. Life membership is available at fifteen times the annual subscription. Members are entitled to copies of the *Sussex Industrial History* and the *Newsletters* without further charge.

Membership enquiries to the Hon. Secretary, R.G. Martin, 42 Falmer Avenue, Saltdean, Brighton BN2 8FG (Tel. 0273 303805).

ISSN O263 5151
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NOTES ON SUSSEX LIMEWORKS

Paul W. Sowan

G. Newington & Co. Ltd. of Glynde; and
Ross Limeworks Ltd. of Newtimber, near Hassocks

During the course of my researches into the hearthstone mining and building stone quarrying industries of Surrey, I had cause to meet the late Major Edgar Taylerson, formerly managing director of the by then wound up Dorking Greystone Lime Co. Ltd., of Betchworth in Surrey. The company, which had been incorporated in 1865, had during its lifetime of almost a century a remarkable history of commercial and technological flair. There were early links with Sussex interests, including collaboration with the Sub Wealden Gypsum Co. Ltd., with which company the 'Dorking Greystone' exchanged locomotives, and developed a trade-marked brand of wall plaster (Sirapite – the word is derived from 'Paris'!). The Dorking company built one of the earlier limeworks hydrating plants at Betchworth in 1924, and appears at least within Surrey and Sussex to have been seen as something of a pioneer to whom requests for advice were often sent. At this date, it was still the general practice for limeworks to send lump or ground quicklime to their customers, which customers had then to hydrate the material for themselves. There were predictable accidents when consignments were sent off, inadequately sheeted, in rainy weather!

On the commercial front, in addition to collaboration with the Sussex gypsum mines, the 'Dorking' company was a prominent voice in the some-time Greystone Limeburners' Association, and files relating to that body contain material relevant to the study of limeworks throughout the home counties. And the directors at Betchworth operated a programme of buying-up or considering for purchase smaller works in Kent, Surrey and Sussex, or converting privately operated concerns into subsidiary or associated limited companies. One such was the firm of George Newington & Co. Ltd., of Glynde in Sussex. Finally, the 'Dorking' company, which at its peak of development before the Second World War had a staff in excess of 50 persons, and workshop and laboratory facilities, provided advice, contracted for repair works, and provided a chemical analysis service.

George Newington & Co. Ltd., Glynde
(TQ459085)

G. NEWINGTON & CO. Ltd.

LIME MANUFACTURERS

Telephone: Glynde 210
Telegraphic Address: Newingtons, Glynde

Established 1824
Incorporated 1935

LIME—Grey Stone - Grey Ground - White - Agricultural - Hydrate. Carbonate of Lime and Chalk

DIRECTORS:
MAJOR E. W. TAYLERSON, M.I.Mech.E.
H. MALCOLM SMITH
W. F. HART

GLYNDE
SUSSEX

A small file (now in the Surrey Record Office – see below) of the 'Dorking' company's papers relating to the works at Glynde contains what is clearly a far from complete set of documents with dates ranging from 1935 to 1967. Newington's letterheading in 1958 informs us that the company had been established in 1824, and incorporated as a limited liability company in 1935. This incorporation had been agreed between Newington and the directors of the 'Dorking' company. In 1958, Newington's directors were Major E.W. Taylerson (of the Dorking company), Anthony W.F. Taylerson (his son), and H. Malcolm Smith (director of the Oxted Greystone Lime Co. Ltd., Surrey) – so by this time the works at Glynde were effectively controlled from East Surrey. The earliest papers (1935 - 1936) are five working drawings for the

'Hydration plant' or 'New hydrating plant', for 'foundations of steel frame building', for 'extension to plant. Proposed steel frame building' and for 'details of R.C. slabs.' The concrete slabs drawing was supplied by C. & A. Guttridge, constructional engineers of Burgh, Lincs. The 'extension to plant' drawing was produced in the drawing office at Betchworth ... 'Designed by and the property of the Dorking Greystone Lime Co. Ltd.' Whilst not labelled as for a hydrating plant, several of the drawings make provision for features such as 'sump for No.1 elevator boot' and 'uptake and cowl' which suggest this. Regrettably, no drawings of the hydrating machinery itself appear and it seems likely that this was bought in as standard items from specialist suppliers. Regrettably, hydrating machinery seldom survives when limeworks are abandoned or modernised, it being easy to find a sale for scrap.

Statements for 20 June 1945 reveal that products from the Glynde works included 'grey lump', 'grey ground' and 'grey hydrate', as well as 'small chalk'; coke was being used as fuel in the kilns; and the bank statement at 22 June 1944 indicated 'Overdrawn £1002 18 6d!'

An analysis of a 'sample of grey chalk' from Glynde (carbon copy retained at Betchworth) gave data on size grading, moisture content, and calcium carbonate content (86.98%)

A paper dated 30 Nov 1961 refers to various items of plant, including a drag scraper, a chalk crusher, a new 24" belt conveyor, mechanical drawing plant (i.e. for taking quicklime from kilns) etc. One containing information from 1964 - 65 refers to a 'No.2 hydration plant' with prices for conveyor belt, hoppers, hydrator and accessories, conveyor worm, air separators, elevators, control & electrical gear etc. Further papers deal with financial matters, sales statistics, insurances and so forth. However incomplete, this small file of papers offers useful starting points for detailed research into the commercial and technical history of the Glynde limeworks.

Ross Limeworks Limited, Newtimber, Hassocks
(TQ275136)

ROSS R BRAND

Ross Limeworks Limited.

DIRECTORS: C.L.WHITE. W.T.CRIPPS. F.A.BYRNE.

LOCATION
(OFFICE & WORKS)
ON MAIN LONDON–
BRIGHTON ROAD,
6½ MILES NORTH OF BRIGHTON.

FINEST HYDRATED LIME (GREY AND WHITE)
BUILDERS' GREYSTONE LIME, GROUND LIME
AGRICULTURAL LIMES, (Quick, Hydrated & Ground)
LIME – BRICKS – SAND AND CHALK.

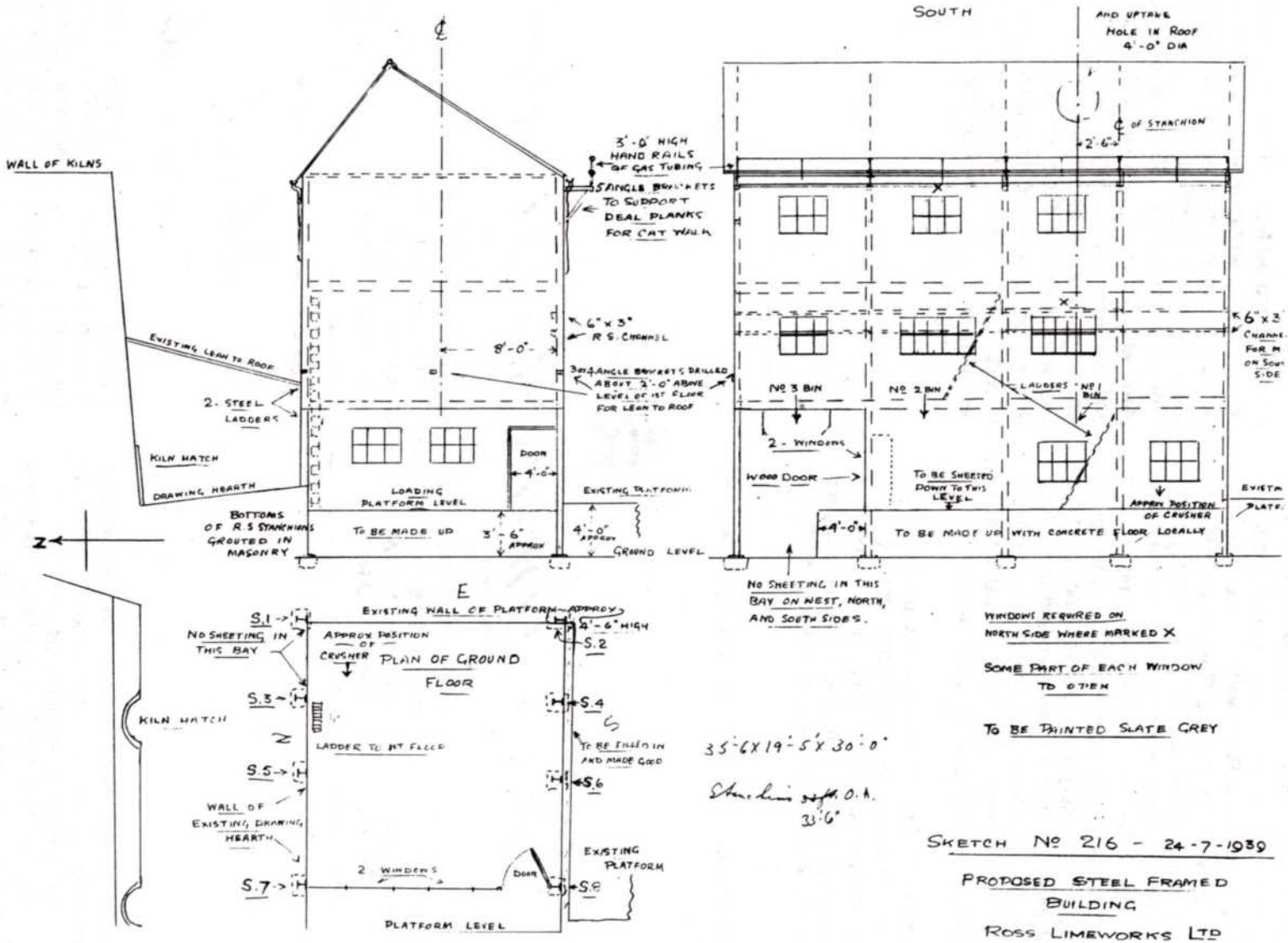
TELEPHONE & TELEGRAMS:
POYNINGS 59
(NEWTIMBER WORKS.)
MANAGERS OFFICE: POYNINGS 73
FINDON 116
(FOR WASHINGTON WORKS)

OFFICES (POSTAL ADDRESS)

Newtimber,
Hassocks, Sussex.

The company's letterheading in use in 1946 reveals this limeworks to be 'On main London – Brighton Road, 6½ miles north of Brighton.' Directors were C.L. White (resident at" The Oaks", Lewes Road, Haywards Heath), W.T. Cripps, and F.A. Byrne. The company supplied 'finest hydrated lime (grey and white), builders' greystone lime, ground lime, agricultural limes (quick, hydrated and ground), lime, bricks, sand, and chalk.' Papers dated 1936 to 1946 are preserved.

It appears that in 1936 the 'Dorking' company was in correspondence with Messrs. C.A. Guttridge of Burgh, Lincolnshire, for the supply of a steel-framed building for the Glynde works, and for bins and shutes; and that in July 1939 they acted in a similar capacity for the Ross limeworks, a 'Copy of order No. 1741' dated 11 January 1936 being annotated 'Ditto quoted Ross Limeworks Ltd., 20/7/39.'



SKETCH No 216 - 24-7-1939

PROPOSED STEEL FRAMED BUILDING

ROSS LIMEWORKS LTD

The outbreak of war caused the proposal for hydrating plant at Newtimber to be abandoned, after considerable correspondence during the period June – August 1939. Frank Byrne (director) wrote to Major Taylerson on 12 June to say that 'Relative to our conversation on Saturday, I am pleased to say that my co-directors agree and confirm the assurance given by me that it is understood that in return for your assistance in planning our new works, we shall at all times work in friendly co-operation with your Company, the Oxted Lime Co. and Newingtons as a group ... ' Ross Limeworks directors visited the Glynde works later the same month, and the Glynde Company demonstrated their three-year-old hydrator by running some three tons of Ross quicklime through it. On 7 July Byrne wrote again to Taylerson, expressing concern over 'The distribution of trade available in Sussex and East Hants' and 'The agricultural lime business.' 'An unofficial chat would do good as then Pepper could be approached with some more or less definate [sic] ideas. I always find it difficult to agree with Mr. Pepper without some support.' A meeting was fixed for 14 July at Holloway's Restaurant in Lewes, and on 12 July Byrne wrote that 'The matter of sales distribution of lime produced by Sussex burners is now of vital and urgent importance. Unless some settlement is arrived at there will be trouble, and that in the very near future. Our own position is not very tolerable.'

A detailed pencil drawing for the building (although, as at Glynde, not the machinery) for the proposed hydrator survives, dated 24 July 1939, the legend to which includes the wording 'Suggestions submitted by Dorking Greystone Lime Co. Ltd.' Correspondence was being exchanged with Messrs. C. & A. Guttridge during August, but no new hydrator was erected on account of the outbreak of war.

Ross Limeworks Limited survived the war, although they had by 1946 evidently lost the use of their Washington works noticed on their pre-war letterheading. They wrote again to Taylerson on 29 June 1946, as follows:

'As you will remember, this Company was about to erect a hydrating plant on similar lines to the one you have at the Glynde Works but the war stopped further progress.

We have definitely come to the conclusion that, in the matter of output of hydrated lime for building work, we are dead up against it because we are inundated with orders which, under present conditions of manufacture, we are unable to execute.

As you were most good in placing to our advantage your valued experience in 1939 we wondered if, upon taking up the threads again at these new works, you would kindly extend your help in the matter.'

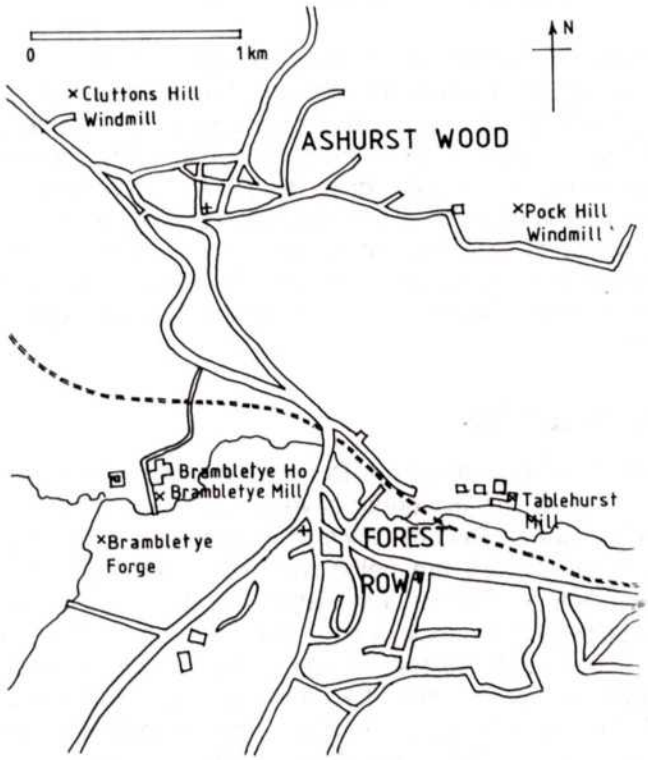
Taylerson replied on 8 July, agreeing to a further meeting at Glynde 'to discuss the problem of a hydrating plant at your works.' He added that 'Not only the cost, but the position of the machinery market generally, will create quite a different prospect in copying the Glynde plant, which as you may recollect, consists of machines of several manufacturers.' The meeting at Glynde was scheduled for 19 July, but what the outcome was is not known as the file ends at this point.

THE RECORDS

The main records of the Dorking Greystone Lime Co. Ltd. are deposited, under several accession numbers, in the Surrey Record Office at Kingston. The 'Glynde' and 'Ross' files are being similarly deposited in the near future. Further information on the two Sussex establishments may well appear in the Dorking Company's Directors' minutes; and in the files of correspondence with the Greystone Lime Burners' Association, the (later) Southern Lime Association; and the Chalk Lime and Allied Industries Research Association. It is, also, entirely possible that files for the various limited companies (including at least one of the trade associations) (albeit weeded) survive either at the Companies Registration Office or, in the event of defunct companies, in the Public Record Office (under BT31 classification.)

THE MILLS OF FOREST ROW

M.F. Tighe



SITES OF FOREST ROW MILLS

Forest Row is a Victorian creation. Before this the present parish lay within East Grinstead, and was covered by a number of manors, of which Brambletye and Maresfield were the most important. Today there is virtually no visible evidence of the five mill sites here identified. This paper endeavours to set out what can be established of their past. There is only one Domesday reference to a mill, Brambletye.

1. POCK HILL WINDMILL. [TQ434365]

Brunnarius merely refers to there having been a windmill in Forest Row but lists it as 'Gone'. There were, in fact, two windmills, both in the Ashurst Wood area. The site of one can be identified NE of the village on Pock Hill. The 1842 Tithe Award Map shows it at plot 716 on the S side of Cansiron Lane, with the accompanying house and garden on plot 716a, about 100 yds to the south. It is shown in the ownership of Lord Colchester, occupied by Richard Turner, tenant of Tablehurst Farm [which had its own watermill – see 5]. Lord Colchester, of Kidbrook Park, had recently added Tablehurst to his estate.

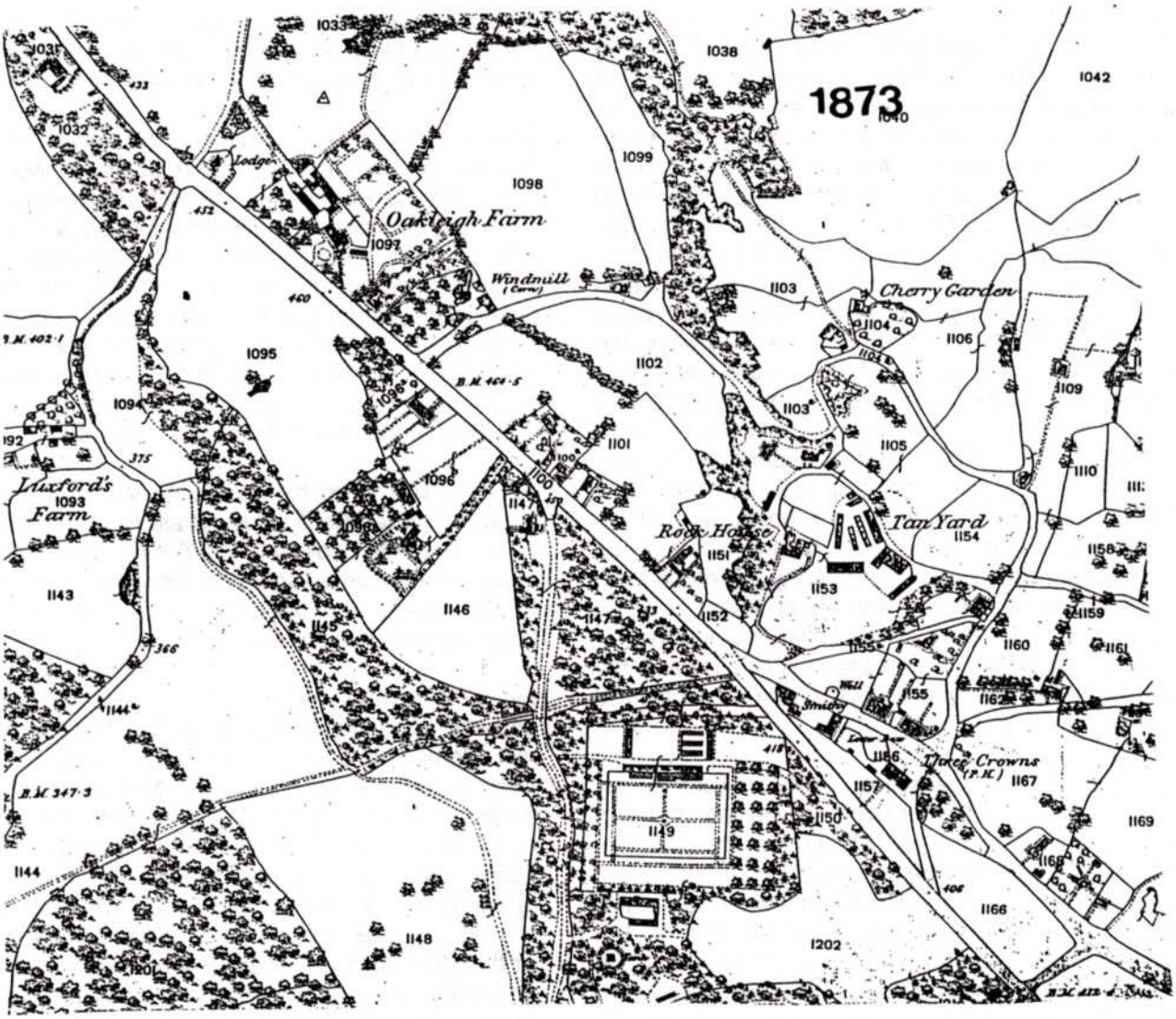
Prior to this, according to a note in the Colchester Papers [PRO 30/9/39] dated July 1820, Lord Henniker, of Ashdown Park, had owned both Tablehurst and the neighbouring Pilstye, although the field called Wheelers [the windmill field] and Perry Shaw next to it were owned by Edward Heaver, who had built the windmill for £1000. {This sounds a large sum, and one wonders whether it may have included an element for the land}. Heaver was the tenant farmer at Tablehurst, and had lived there for 50 of his 52 years. He had "three mill grinders" {this may have included the watermill}, employed five constant hands on the farm, and 30 people at harvest. He traded chiefly in flour, and also made cheese for sale. He ground for his neighbours but traded mainly in Kent, particularly in the Edenbridge area. In the same papers, 29 Feb 1828, it is recorded that Wheelers and Perry Shaw, together with the windmill, formerly in the tenure of Robert Ford and since of Thomas Ellis, were occupied by Edward Heaver. *Pigot's Directory* of 1839 shows Edward Heaver at Tablehurst, and also refers to James Turner at "Frame Post" mill, but it is not clear just which mill this was, especially as he also appears at Dunnings Mill.

We have no knowledge of when the windmill was abandoned; two pre-1914 postcards of Chapel Lane each show what seems to be the silhouette of a postmill to the right on the distant skyline, but all the evidence points to it having been abandoned much earlier than this. All that remains today is a large mound on the ridge, beside Cansiron Lane. It is a commanding site, open to the winds from all directions, though the trees around it must be more recent. In the field below, still within a fence and hedge, is the mill house and garden.

2. CLUTTONS HILL WINDMILL, ASHURST WOOD [TQ413371]

This mill stood beside the present A22; the residential road by the site is still known as "Windmill Lane", although no visible traces remain. One of Bourne's 1826 watercolours shows a postmill on this hill, but so far this is the only known portrayal, and is probably subject to artistic licence. The 1842 Tithe Award shows plot 1458, part of Pawley's Farm, as House Windmill & Meadow, owner George Lowcock, occupier John Heasman. The accompanying map appears to show the mill in the middle of the enclosure, slightly offset to the east.

The 1851 Census [332/24] shows at Cluttons Hill William Walker Heasman, widowed, aged 54 and born at Ardingly, Miller, together with his children aged 11 to 25, all born in East Grinstead; this indicates the likelihood that he had been there for some time, and it could also be that the Thomas Heasman at Rowfant Mill might have been his son. On the 1871 OS plan the



ASHURST WOOD WINDMILL

site is marked "Windmill [Corn]", but the exact site is difficult to identify. By the 1910 survey all traces have gone, and the houses to be seen today have been built.

3. BRAMBLETYE MILLS [TQ416354]

Brambletye was a major manor, and all the indications of road and track alignments lead to the conclusion that it was the principal settlement in the district before Forest Row came into existence. In Domesday the manor is stated to have had a mill worth two shillings. The site is particularly interesting in that the whole complex of medieval moat, ruined Tudor house, farm and mill, although within a hundred yards or so of the River Medway, is actually sited just above the flood plain, on a well defined early north-south route which crosses the Medway on a bridge with an inset stone bearing the date 1623. It is conceivable that this was the original crossing point of the Medway before there was a bridge at Forest Row itself. The Medway at this point has a well developed flood plain, into which the river has dug deep in more recent years, and it is difficult now to identify possible earlier channels, especially as the building of Weir Wood Reservoir in the 1960s has further distorted the position. However, it is clear that the mills were fed, not from the river itself, but from the small stream which comes SE from East Grinstead, having worked Dunnings Mill there on the way. At a point 600 yds upstream from the mill, the 1932 Ordnance Map shows the two streams as being only about 40 yds apart, and running parallel to each other for some way. This gives the probability that the original confluence of the streams could have been at this point [412354] and that the lower part of the millstream was originally an artificial leat.

C.F. Tebbutt [*WIRG Bulletin* 6/1973], whilst searching for the forge site [see 4 below] reported the exposure by recent dredging of what looked like the buried timbers of a water-powered mill on the Medway at TQ 41153536, i.e. just about by this putative confluence. This may in fact have been the remains of some original sluice gear for sending the Medway waters up a leat. The late Mr. R.W. Jack, a local contractor, recalled having seen up to some 20 years ago what he identified as sluice gear in that position. A very small stream now coming down from Ashurst Wood could not drive a mill today, though there is always the possibility that at an earlier date it might have been sufficient for a small mill. At some date, certainly prior to the 1842 Tithe Map, a weir and sluice were constructed on the Medway at around TQ408358 [incidentally giving Weir Wood its name], in the area now occupied by Weir Wood treatment works; this tapped the Medway waters and allowed them to be diverted to the Dunnings stream; early OS maps have an arrow indicating water flow along a leat in a NE direction. Thus by 1842 at the latest Brambletye mill could use the water of both the side stream and the main river – a catchment area giving a substantial supply.

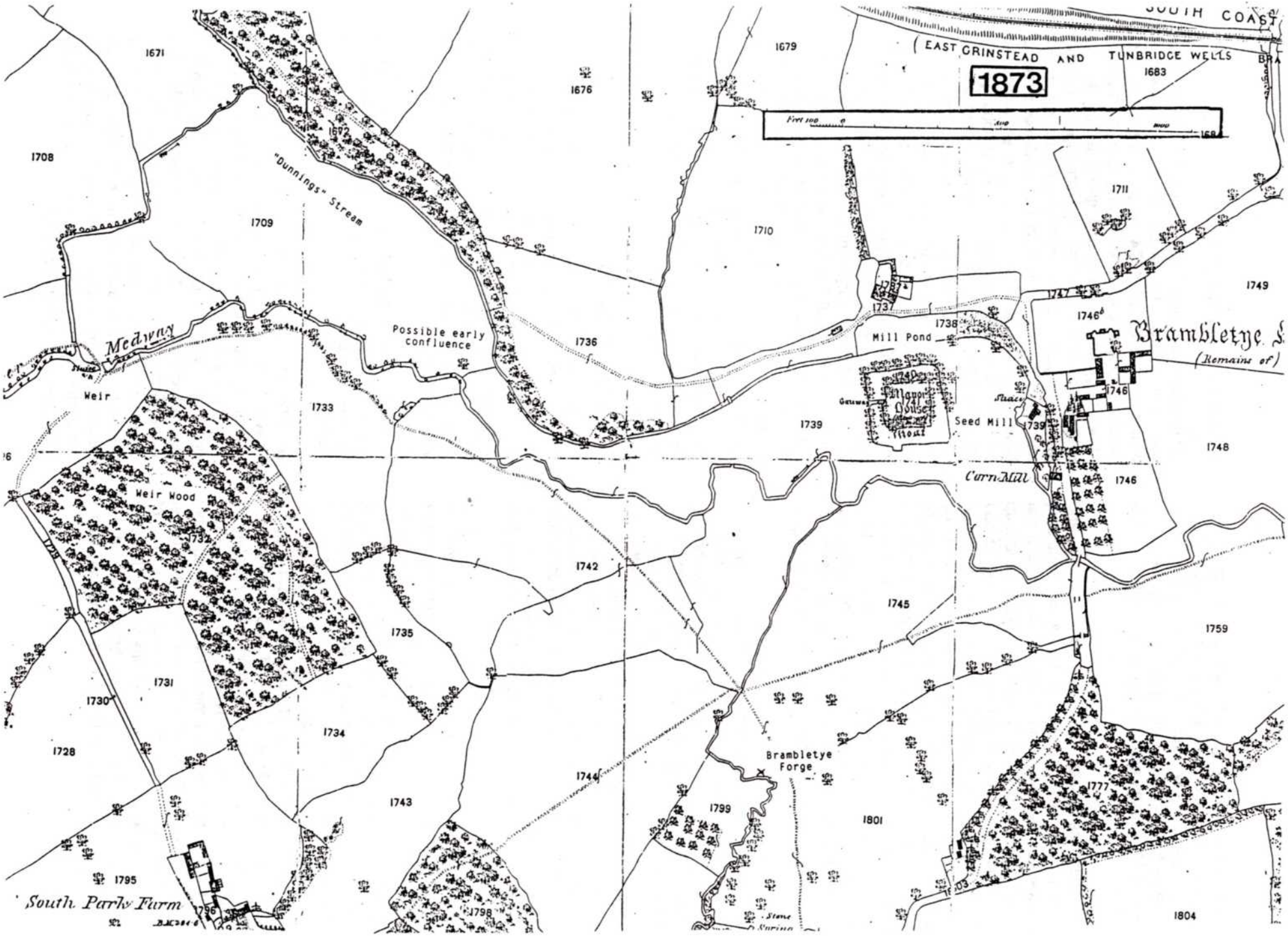
Later agricultural operations have obscured the picture, and it is now impossible to see the shape of the millpond, but the 1932 OS shows the southern bank of the Dunnings stream being embanked from a point near the putative original confluence of the two streams, and a marshy area to the north of it. The embankment continued right through to the site of the mills themselves. The 1842 tithe map does not define a mill pond, but refers to the whole area numbered 854 on the 1932 OS as "yard and pond". The schedule lumps into plot 872 [864 on later OS maps] "house and mills" – note the plural – and the field on the other side of the stream, later merged into a larger meadow, is plot 876 "Shucking Mill Meadow". At this time the owner of the whole estate was A.G.W. Biddulph, and the farm was occupied by Richard Sisely. We come on to firmer ground, figuratively, with the 1873 Ordnance Survey which shows a well defined pond running east from a point between the medieval moat and the Waterloo Barn for some 150 yds, and then turning south towards the mills. By the 1929 revision most of this pond is shown as marshy ground.

The important feature of the 1873 map, however, is its evidence for the existence of two mills on the site. At the SE end of the pond is a dam, with a sluice at its W end discharging the overflow into a tailstream running down to the Medway. At the other end of the dam the pond connects, apparently by a culvert, to a secondary millpond running S, with a corn mill shown at its end, with tailrace joining the tailstream from the upper dam. Below the upper dam is a sizeable building, obviously the second mill; by 1929 this has gone, but the sluice remains, and its position can be seen today.

Auction particulars of the sale of the remainder of the Brambletye Estate, some 1300 acres, in November 1865, include Brambletye Mill with Brambletye Farm, all in the occupation of Messrs. Mellish & Sons and refer to "The well-built and substantial water corn or Flour mill, with over-shot wheel driving three pairs of stones and a seed mill, mill head and stream". On the schedule of the fields and buildings are "872 House, Offices, Mill &c. 1a.1r.36p" and "875 Flour & Trefoil Mill & Grounds 1.r9p." It seems reasonable to infer that 872 is the upper mill and 875 the mill proper.

Mr. E.C. Byford, in his invaluable series of *Historical aspects and recollections of Forest Row* [Vol 4, parts 3 & 4 – privately published 1990] has made a detailed study of Brambletye, and as a result we know of many of the millers who operated there. The following is largely drawn from his work:-

By 1711 the manor was owned by the Biddulph family, probably absentee landlords, letting off the farms and mill. Sometime after this Benjamin Heaver became miller and farmer at the mill; he remained there till his death in 1775, being followed by his wife Ann and then by William Wallis and his wife. By 1807 William Durrant was miller, and a nephew describing a visit refers to the two mills; William's son William took over in 1823 and was succeeded by William Kelsy in 1826. At the 1841 census Richard Sisely is shown as farmer and miller, with his two teenage sons appearing as millers. The Biddulphs sold some of the estate in 1843; at this time James Dickinson was the miller, employing another miller, Walter Elphick, and a 14 year old William Heaver [in the 1851 census there is no reference to any identifiable miller at Brambletye – neither Dickinson nor Heaver appear, and Elphick is at Tablehurst; however it could be that Robert Grove and his son Alfred were there – see Appendix]. James and Harriet Mellish, of the milling family from Edenbridge took over the tenancy in 1859; on James' death in 1883 Charles Holmden, from Haxted Mill, who had previously milled at Scarletts, Cowden, took over and was followed by his son Dorrie at the farm, with his second son Gus milling there until 1927, when his brother sold up and Gus moved to East Grinstead, where he established a corn merchant's business. Dickson & Church operated the mill from 1930-37 when they moved to Isfield and took over the watermill there [information from Frank Gregory]. After that milling seems to have ceased, and when the Hambro family sold the remainder of the estate in August 1939 the mill was described in the particulars [copy in possession of Forest Row Parish Council] as "The



THE MILLS OF BRAMBLETYE

brick, timber and slated OLD MILL of two floors, with mill machinery and three stones as fitted [used by the tenant as Granary and for storage purposes". It appears that Mr. Main, tenant of the farm, was using the mill for storage although it was not included in his tenancy!

Mr. Main, the tenant, bought the farm and mill, and sold it soon after the War to Mr. Anke Pedersen, founder of Rentokil, who made a very substantial investment in improving the farm, which he brought up to a very high standard. As part of this work, he had the mill completely restored, including the machinery, which was put in full working order. Unfortunately he died in 1958. Eventually in 1965 the farm was bought by a Mr. Hale who applied for planning permission to convert the mill to a dwelling house. This was refused, and as a result he deliberately burnt it down, filled in the mill stream and leats and drained, ploughed and levelled the mill pond. It is now virtually impossible to identify any trace of what was once a busy milling complex.

We have no certain pictorial record of the upper, or seed, mill. However, in the Pocock Collection in Brighton Reference Library is a print, c.1800, showing from the SE a two storey thatched building with a large external overshot wheel beside it, fed from an overhead launder, and it seems possible, allowing for artistic licence, that this may be the seed mill. A water colour by James Bourne in 1826, from nearly the same viewpoint, unfortunately has the mill building obscured by trees, but the position of a track and fence identify the site with the Pocock print and the general perspective sets the position nearer the upper site than the lower.

As far as the main mill is concerned, a pre-1914 postcard depicts a well maintained building, brick ground floor, weather boarded above, with slate or tiled roof and the narrow lower mill pond without weed, but does not show the wheel. A photograph of a 1950s Rogationtide procession gives the same scene with no evidence of dereliction – presumably as a result of Pedersen's restoration. As might be expected, the most reliable illustrations we have are two drawings by Frank Gregory in August 1936. These show a brick and weatherboarded main building, with a slated [?] mansard roof and on, the N side, two small outshoot buildings, one timber and the other, with presumably the exhaust of an oil engine, in corrugated iron. It would seem therefore that there was some form of mechanical power to supplement the wheel. The latter apears to be overshot or high breast, around 12' diameter and 4' width and is housed completely within the building.

4. BRAMBLETYE FORGE [TQ414350]

Straker [*Wealden Iron,* 1931] confused the issue of the site of this forge, for which there is documentary evidence in 1562 and 1574, by placing the mill, with which he appeared to be identifying it, on the Medway rather than the tributary, and giving a latitude and longitude roughly approximating to the mill. He partially redeemed himself by mentioning a place name, Forge Mill Mead though at the time this does not seem to have been identified. At first, this even misled as sound a field archaeologist as C.F. Tebbutt, [*WIRG Bulletins* 6/73 and 16/79] who twice visited the mill area and commented on the complicated water systems, and thought the presence of so much slag in roads confirmed the forge usage of the site. However, in 1982 [*WIRG Bulletin* 2/2] his attention was drawn to the fact that a field called Forge Mill Mead, close to Court-in-Holmes, a quarter of a mile away from the mill on the other side of the river, was identifiable on the 1865 sale particulars [this name does not appear on the Tithe Map]. On visiting the site, he found a silt-filled hollow, suitable as a pond, but with no bay, and a low mound of brick debris of a type indicating a pre-1650 building. In the stream several pieces of forge bottom were found, with squared timbers protruding from both banks giving the appearance of being part of the hammer framework.

5. TABLEHURST [TQ434352]

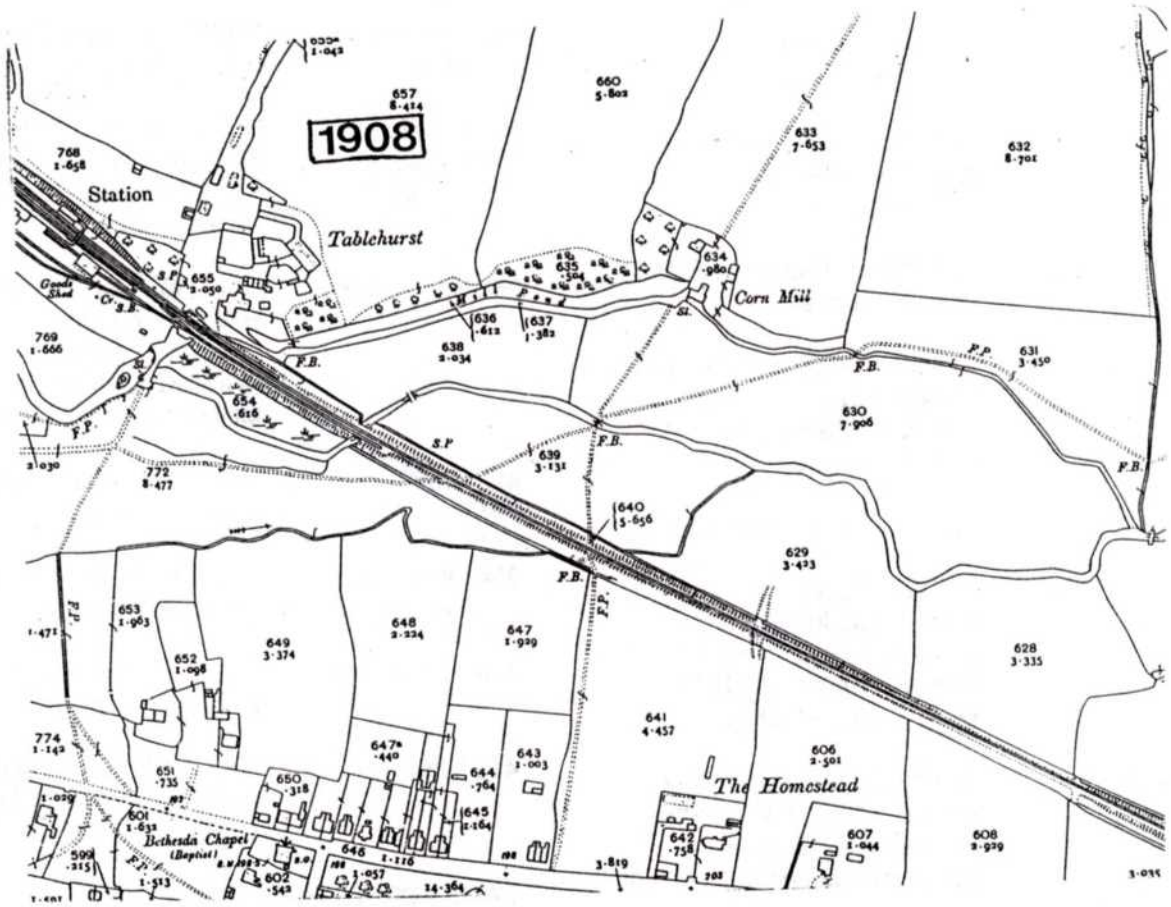
This small farm mill, part of Tablehurst Farm, lay about 300 yds E of the main farm buildings, originally known as Dickers Hall, on the N side of the Medway flood plain. A weir and sluice was built on the river near the farm. From here the leat became virtually an elongated mill pond, with a by-pass sluice at the mill leading down to a tail-stream which rejoined the river some distance down.

The first reference so far traced to the mill is in 1628 [ESRO WHL 1], where we learn that Robert Pickering had the manor of Tablehurst, the water mill, Dickers Hall etc.

By 1820 the mill was being operated by Edward Heaver [see 1 above], and by the 1842 Tithe Apportionment by Richard Turner. In the 1851 census Robert Turner is shown as the farmer at Tablehurst, but at the watermill is Walter Elphick, from Chiddingly, who had been at Brambletye as an employee in 1843. The Turner family continued to run Tablehurst, but eventually Horace Turner took the milling business into the centre of the village in the building now used by Dickson & Church. Early photographs show a fairly substantial chimney on the site, so it is possible that he may have used steam power there.

When the East Grinstead to Tunbridge Wells Railway was built in the 1860s it was necessary to divert both the Medway and the mill-leat at the western end as they were in the way of the end of Forest Row Station. The weir and water-courses that we see today are therefore not the originals at that end, but date from the railway construction. This is apparent when comparing the watercourses on the tithe map with those today. An article in *Sussex County Magazine* [vol.13 p.385] stated that the actual mill "known as Dickers Hall" had been moved to its present site, but this would seem to be an exaggeration.

A Bourne watercolour, c.1820, depicts a two-storey weatherboard and tiled mill building, whose general shape accords with that on the 1920s OS map, though there is a trackway which may be artistic licence. There is a large overshot wheel in a lean-to, and the whole closely resembles the building shown in an Edwardian postcard – a small stone and weather-boarded barn-like building with a hipped tile roof straddling the mill stream, with the pond in water. The sluice gear is visible, but not the wheel. A pre-war drawing in *Sussex County Magazine* Aug. 1951 by Kenneth C. Reid shows the wheelpit side of the mill in an advanced state of dereliction. The building is crumbling away, although a gear wheel is visible through a window, indicating that the machinery was still there, and the wheel shaft lies in situ, but bereft of arms. The mill was finally demolished in the 1930s and there is nothing to be seen today apart from a slight depression in the ground marking the site of the pond, and the miller's cottage, which still stands.



TABLEHURST MILL

APPENDIX –
MILLERS IN EAST GRINSTEAD AREA IN 1851

In searching the 1851 census for Forest Row millers, it seemed sensible to extract details of all millers, millwrights etc. in the schedules for the parishes of East Grinstead, Worth, Crawley and West Hoathly [HO107 1641 – *Barnes Index* Vol 18]. These are given below.

EAST GRINSTEAD PARISH

273 Dunnings Mill	TURNER, James HD M 49 Miller/Farmer 107 ac. b. W.Hoathly, children b. EG.
do.	CORNWELL, Robert SV U 23 Miller b. Rotherfield
Dunnings	BOYS, William VR U 26 Miller b. Heathfield. Staying as a visitor
263 Old Mill	no miller – R. Avis ag. lab. of Hartfield
215 High Street EG	MELLISH, James HD U 22 Miller/Corn Merchant b. Edenbridge
382 Rowfant Mill	HEASMAN, Thomas HD M 31 Miller b. Lindfield
262 Fen PLace Mill	STANBRIDGE, John G. HD U 21 Miller b. EG
do.	FRIEND, Thomas SV U 20 Miller's Labourer
269 Mill Place Farm	No miller shown as resident
284 Forest Row Ho54	GROVE, Robert HD M 42 Miller b. Chiddingly; children b. East Hoathly & FR.
do.	GROVE, Alfred SO U 20 Miller b. East Hoathly
320 Tablehurst Farm, FR	TURNER, Robert HD M 42 Farmer 242ac b. W.Hoathly; children b. Balcombe [brother of James at Dunnings?]
320 Tablehurst Mill, FR	ELPHICK, Walter HD M 40 Miller b. Chiddingly; children b. Lewes All Saints
332 Cuttons Hill, FR	HEASMAN, William Walker HD W 54 Miller b. Ardingly; children b. EG
296 Forest Row Green	UNDERWOOD, James HD M 66 Miller's Loader b. EG

PARISH OF WEST HOATHLY

465 Burstow Bridge	GLASSPOOL, James HD M 46 Miller b. Cheriton HAM
482 Mill House	HOLLAND, Henry HD W 34 Miller b. Hoathly; children b. Kent, Speldhurst

PARISH OF WORTH

392 Hazelwick Mill	CAFFIN, Peter HD M 36 Miller/Farmer emp 24 b. Worth; all children b. Worth
do.	JENNER, Henry SV U 52 Miller b. Slaugham
do.	TRENDELL, James SV W 26 Loader b. Worth
392 Crossways Farm	ANSELL, John HD M 28 Miller/Journeyman b. Horsham
352 Furnace Mill House	HALL, William HD M 53 Woodreive b. Godstone
do.	COLLINS, Alexander LG M 70 Miller b. Godstone
355 Shop House	HALL, Michael HD M 48 Miller b. Godstone children b. Worth
do.	BROOKS, Arthur SV U 50 Miller's Servant b. Horne, SRY
428 Worth	VIRGAR, William HD M 39 Miller b. Worth
354 Beerhouse, "Sign of Content"	PILMBEEM, William LG U 28 Millwright b. Worth
344 Turners Hill	DANCY, John HD M 30 Millwright b. Worth
410 Workhouse	MIDDLETON, Christopher INM W78 Former Millwright b. EG

PARISH OF CRAWLEY

442 Manor House	ROBINSON, John HD M 70 Farmer b. Charlwood
do.	ROBINSON, John SO U 31 Miller b. Charlwood
do.	BISHOPP, Henry SV U 17 Improver in Mill b. Isfield

The author wishes to thank June Barnes for permission to quote these extracts.

MACHINE TOOL MANUFACTURE IN SUSSEX

Hugh Fermer

An interesting facet of Sussex industry is the story of the only large scale machine tool manufacturer in the area. This is CVA Jigs Moulds & Tools Ltd. which became K&T CVA then KTM and still exists at Hollingbury as FMT.

The story of the Company began in 1919 just after the end of the First World War. During the war from 1914 to 1918, C.A. Vandervell of Acton, London, a company which was connected with the electrical giant Lucas, built a small factory at Hove to produce magneto assemblies for the war effort. When the post war period of reconstruction arrived they transferred the magneto business to their main works and decided to devote the Hove works entirely to tool making.[1] The factory was built on a piece of land between the coastal railway line and Portland Road, just to the east of Portslade station. Access was from Portland Road and the factory consisted of a small block of buildings on a large plot of land some two acres in area and reaching from the frontage on Portland Road to the railway line at the back.

Architects drawings exist showing the plot with the original building, and the extensions built between 1918 and 1934 (Fig. 1). The first foundry building is also shown.[2] The photograph, c.1930, shows the factory looking north from Portland Road. The front shows the company name CAV Small Tools used from 1919 to 1934 (Fig. 2)

There were in the 1920s two separate sections in the factory, one being devoted to the manufacture of special jigs, tools and fixtures; the other to quantity production of a new range of tools for machinists such as calipers, squares, vee-blocks etc.[3] These tools were of very high quality and many are still in use after almost seventy years.

The magazine *Model Engineer* for 13 April 1922 has an interesting article which describes the factory at that time. The illustration taken from the magazine shows some of the range of small tools produced (Fig. 3) and the view of the main machine shop is also of this period (Fig. 4). In 1922 the source of power for the overhead line shafting was a large gas engine situated between the two shops; the drive belts passing through slits in the wall.

During the late 1920s the factory grew slowly in size and the part of the business making jigs and fixtures expanded considerably. A small iron foundry was established in 1927 at the back of the factory near the railway line, and the heat treatment shop was considerably enlarged.[4] In the early 1930s the small tool business declined a little but the production of jigs and fixtures continued to increase; it was during this period that the Company became interested in making dies for the motor industry.

In 1933 Mr. Eric Aron became involved in the Company, and in 1934 he became Managing Director with a half share in the equity; the other shareholders being his father and brother who were directors of Lucas. It is said that Eric Aron paid £7,000 for the half share in the business and that the following year he bought out the other shareholders for another £7,000 so that the business became his for £14,000.[5] Eric Aron changed the name of the Company from CAV Small Tools, which it had been since 1919, to CVA Jigs Moulds & Tools when he became the owner. The reason for retaining the same three letters in a different order, and whether the final letter A in the new title was his initial, is not clear. He was a very good business man, and when he took over the Company he diversified his products so that he always had some which were profitable even when some temporarily were not.

One of his first new ventures was moulds for plastic components. Bakelite, the original hard plastic material, was the latest thing at this time for radio cabinets, and E.K. Cole of Southend, who were one of the largest producers of radios in the United Kingdom, marketed theirs in the new Bakelite cabinet for which CVA made the moulds. This led to other orders, and moulds for Bakelite components became a large part of the business. At this time it was considered that the quality of the jigs, moulds and press tools produced by the Company was as good as, if not better than, any competitor, and moulds and dies were exported to Europe, even to Germany where technology was very advanced. A contract was also entered into with National Cash Registers of America which was very successful and lasted for some years.[6] In the mid 1930s the Company invested in three of the latest type of mould milling machines; they were made by Keller in America and milled the profile of a mould to a three dimensional pattern made of wood. They were considered to be the current state of the art in pantograph milling machines, and they were in use for many years.

The link with Lucas led to a contract for the manufacture of the well known Lucas girder spanners (Fig. 5). A production line was set up at Portland Road to produce the three sizes of spanner in the range, and

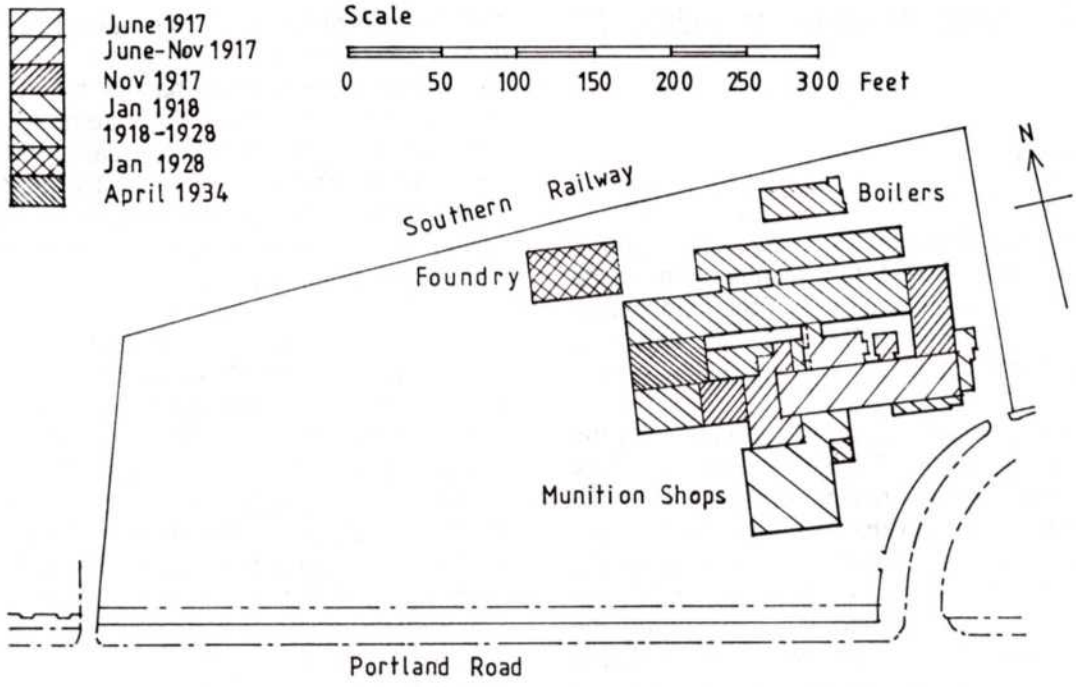


Fig. 1 Development of the CAV Small Tools factory at Portland Road, Portslade 1917-34

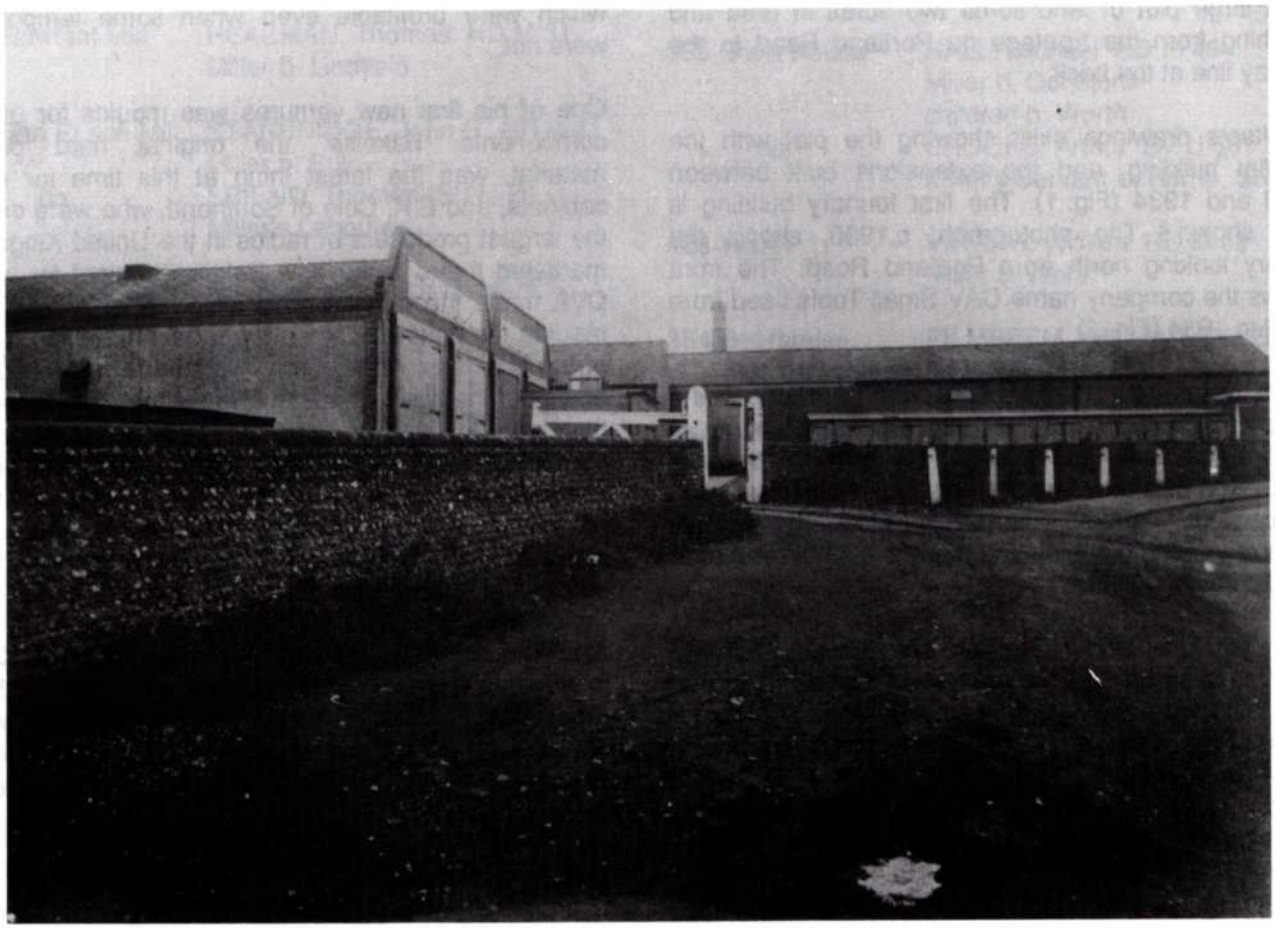


Fig. 2 CAV Small Tools factory, Portland Road, Portslade c.1930

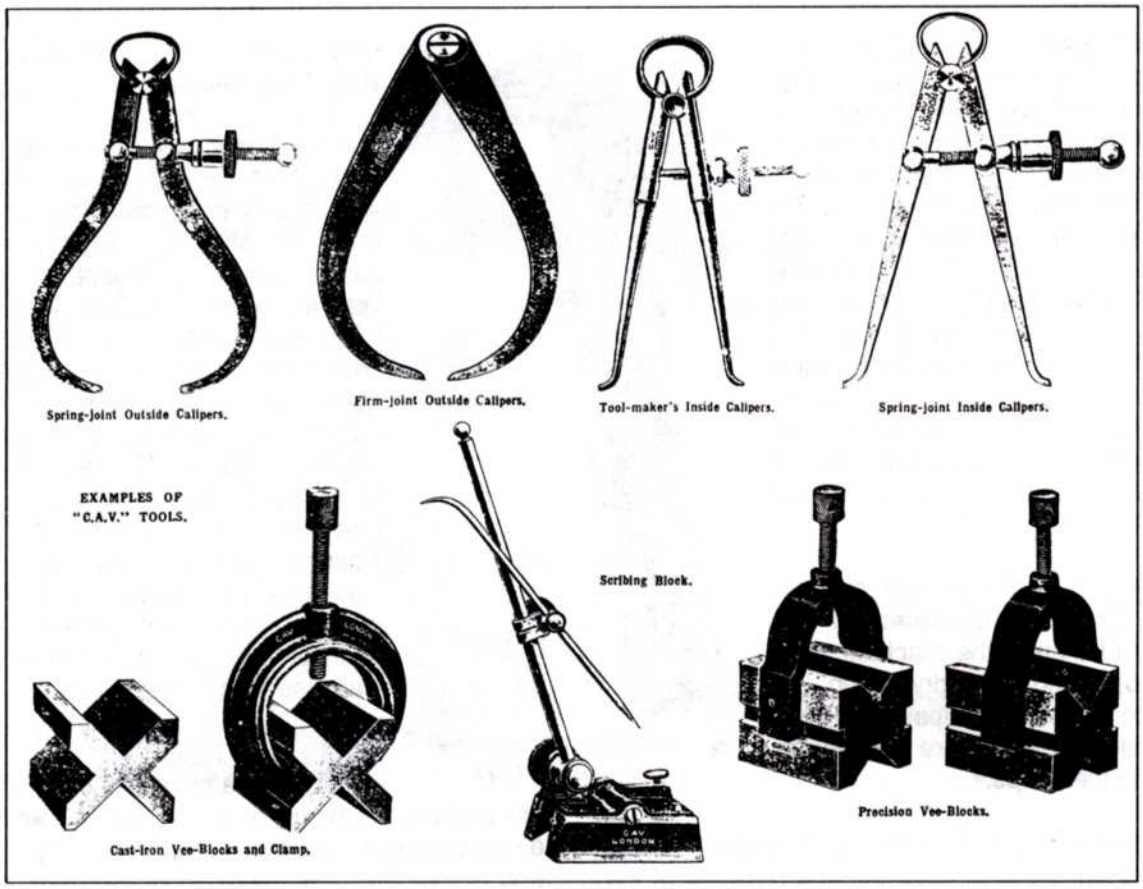


Fig. 3 Types of hand tools manufactured by CAV (*The Model Engineer* 13 April 1922)

Fig. 4 Main machine shop CAV Ltd. c.1922

the contract lasted until after the War. The Company was also making a range of three and four jaw lathe chucks for a well known U.K. chuck manufacturer and producing several hundred a week. Another long running contract was the manufacture and assembly of the date stamps used by the GPO for franking letters and cards. The stamps were made to a very tight specification and a GPO inspector from London visited the factory regularly to monitor quality. Part of the assembly was a rack to hold six stamps, and a contemporary magazine has on record that the rack assembly was priced at one shilling (5p) each.[7]

At the time that Eric Aron took over the Company, the staff consisted of 120 mostly skilled men in the machine shop, fitting shop and foundry, and 30 draughtsmen, clerical supervisory and technical staff. There were no women employed in the shops.[8]

Fig.5 Lucas girder spanner produced by CVA

An article in the magazine *New Era Illustrated* in 1933 gave a very enthusiastic write up, and because of the tool making facilities of the Company, called Hove "The Coventry of the South". Illustrations from this article show the turning section, grinders, the fitting shop, and the foundry.

In the mid 1930s a completely new type of product was introduced; this was the manufacture of machine tools. Eric Aron knew that he could not compete with the makers of large machine tools like Alfred Herbert, Archdale, Dean Smith & Grace and the like, but he saw a slot in the market for smaller high precision machine tools which were currently being produced in Germany and the USA. The first of these new products was the H Gear, a German invention made under licence by CVA. It was a very effective variable speed gear box which could be fitted to almost any type of machine tool. Those machines made for use with overhead shafting could be given an individual electric drive motor and a variable speed gearbox with this attachment. It sold in great numbers and production did not cease until the early 1950s. The illustration (Fig. 6) shows the attachment as used on a lathe, and the sketch (Fig. 7) shows the way in which the output speed is varied. The input and output shafts, both splined, have a pair of sliding cones on each. The cones are able to move together or apart in opposition to one another, so that as the control is operated, the hardened steel ring connecting the two sets of cones rides up one set of cones and down the other. This gives an infinitely variable drive with the limits set only by the RPM of the drive motor and the size of the cones.

The next machine tool to be produced was a CVA design. This was the CVA die sinking and milling machine known as the CVA 79 Mill. The illustration (Fig. 8) shows that it is a small conventional vertical milling machine with a swivel head and its own drive motor. It had no power feed but was simple and accurate. Many hundreds were made and it sold right through the war years until the late 1940s as did the CVA second operation lathe which was produced at the same time and is shown in Fig. 9.[9] The CVA Capstan Lathe produced a little later, was also a CVA design. It was a small capstan lathe with collets for small diameter work and a built-in H Gear. This was also built during the whole of the war period.

The design and construction of machine tools as well as the continued jig and tool activity made a considerable expansion of the factory necessary, and a new heat treatment shop was built as well as extensions to the machine shops and the drawing office. During the latter part of 1937 the gas engine which drove the shafting for the machine shop was replaced by two large electric motors which we are told gave some trouble initially but settled down after a time.

The outbreak of World War Two in September 1939 brought great changes to the U.K. machine tool industry. Production was under government control and machine tool manufacturers could no longer choose what they made or who they sold it to. The needs of the war machine were paramount. There was great pressure in 1939 and early 1940 to expand production at all costs and at CVA expand they did. The foundry capacity was increased and modernized and, and arrangements were made to move the tool room to Kemp Town where suitable accommodation was found in the garage owned by the Leonard brothers in St. James's Street opposite the junction with Charlotte Street. This whole area has been demolished and the building no longer exists. The spanner and chuck shops had to be moved from the Portland Road factory to allow more space for machine tool production, and accommodation was found for these departments at the old brewery complex at Portslade Old Village. The brewery buildings were erected in 1881 by John Dudney who was already brewing in smaller premises, and they were used as a brewery until 1929.[10] The building retains most of its

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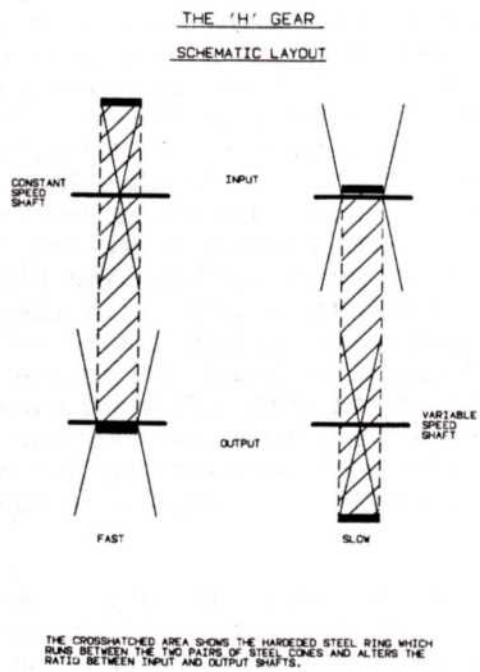

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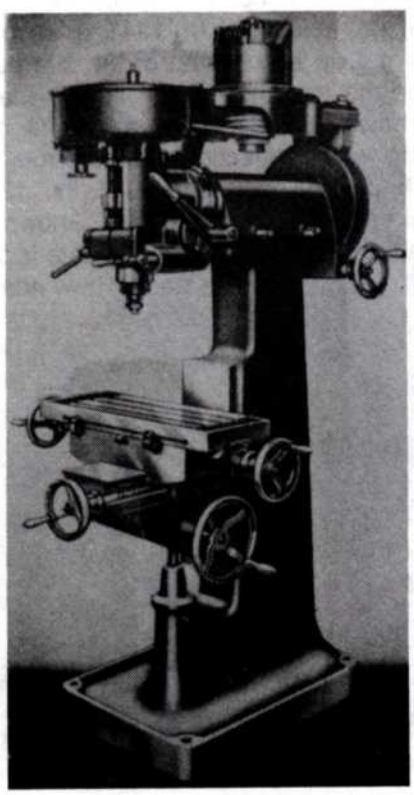

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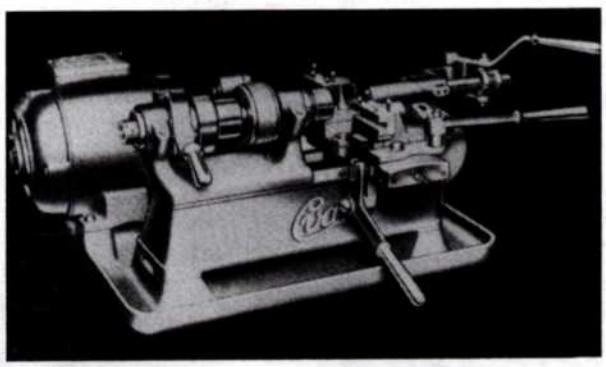

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Fig. 6 "H Gear" variable speed gearbox

Fig. 7 "H Gear" – explanation of the method by which output speed is varied

Fig. 8 CVA 79 die sinking and milling machine

Fig .9 CVA lathe produced in the 1930s and 40s

original features as the recent photograph shows (Fig. 11). The existing machine shops at Portland Road were once more modified and extended in 1939 and at this time some demolition and rebuilding took place. In 1940 a new fitting shop known as "A Block" was built at the east end of the plot next to the Greens factory which at that time fronted Olive Road and made Greens sponge mixture as well as other similar baking products. Pictures exist of the new fitting shop in the course of construction and also when finished (Fig. 12). So in 1940 the Company was still based at Portland Road but it also had large factories at Kemp Town and Portslade Old Village. The machine tool business was centred at Portland Road and new plant and machinery was obtained to replace that moved to the new factories, rudimentary assembly lines were established and machine tool production in a big way really started.

This is not a story of social history, but at this point it might be helpful to consider the shop floor structure and the conditions of work in this factory at the outbreak of war in 1939. A skilled man had to serve a minimum of three years as an apprentice and then another two years as an "improver" before he could receive the coveted union card which showed that he was a skilled fitter or machinist. At the age of twenty one the candidate had to attend a branch meeting of the Amalgamated Engineering Union and provide evidence of his training. If the committee agreed he was formally made a full member of the Union and given the card. He was then eligible for the minimum rate paid to a skilled man in 1939 which was one shilling and sixpence (7½p) per hour for a fifty hour week, about £3-15s (£3.75) per week excluding overtime which was paid at premium rates. The Ordinary National Certificate in mechanical engineering was the young man's passport to managerial or drawing office work and was gained after a three year course of night school for three nights a week after finishing work at 5.30 p.m.; very hard graft indeed. Everyone working on the shop floor clocked a card in the time clock when starting and finishing work, and if the card was clocked more than two minutes late on starting, a quarter of an hours money was stopped. The AEU was a far more paternalistic organisation at this time than it became later. The Union branch had welfare officials, and sick pay and pensions were paid by the Union, there being little in the way of welfare payments from the government at that time. Conditions were fairly tough and would certainly not be tolerated today. The toilets at CVA built in the late 1930s had WC cubicles with doors but the toilet block built near the foundry in the 1920s had WC's with doors only three feet high so that the foreman when walking through could see what every occupant was doing, and woe betide the unfortunate man sitting on the loo reading a newspaper and having a smoke; he would be sent home for a day without pay.

Moves to the ex-Leonard garage at Kemp Town and to the old brewery at Portslade caused a certain amount of upheaval. The new machinery had to be installed and commissioned, and the management structures for the new factories had to be arranged. In spite of this, the Company continued to increase production during the expansion period and within a few months it was all running smoothly. In 1941 a second long building was put up at the east of the site parallel to and adjoining the assembly shop already mentioned. This was known as "B Block" and was a heavy machine shop with connecting arches through to the assembly shop. No photographs of the factory at Portland Road at this stage are known but a reproduction from a letter head at this date is shown in Fig. 10 and gives a good idea of how the factory looked in 1942.

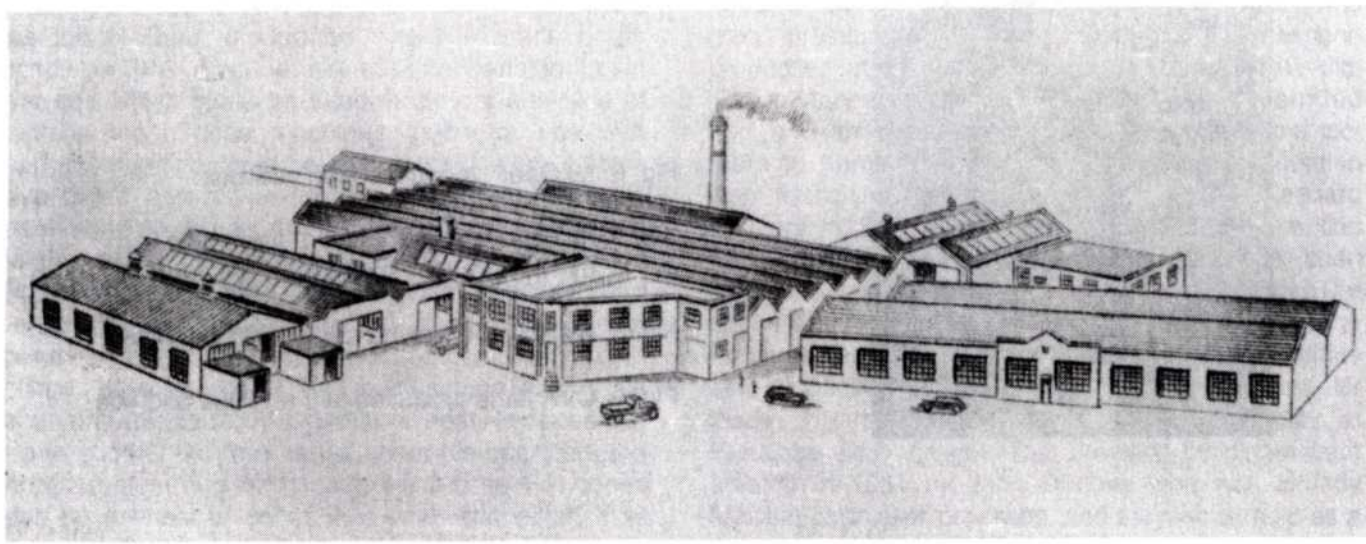

Fig. 10 Sketch of the Portland Road Works in 1942

Fig. 11 John Dudney brewery, Portslade used for the production of spanners and chucks by CVA during World War II

Fig. 12 New fitting shop ("A Block") added to the Portland Road works in 1940

The whole organisation was now on government contracts for the war effort, and there were a number of specialised contracts which lasted all through the war. The design and manufacture of drill jigs for Spitfire wing ribs started early in the War and the manufacture went on for many months as aircraft assembly became more dispersed and more jigs were required. The jig and fixture programme for Rolls Royce became ongoing as new types of engine were designed. The "Gill Ring" line produced the cooling gill assemblies for radial aircraft engines. These gills opened and closed automatically in response to temperature variation and allowed the cooling air to circulate round the fins on the cylinders. It was quite a complicated assembly and was made for several years. Later in the war the Air Ministry became interested in cabin pressurisation for some of the later marks of Spitfire and CVA made the pressure valves for this project. Later still they designed and made a very interesting attachment for "Pluto", the pipe line under the ocean project, which supplied the invasion army in Normandy with petrol fed under pressure through a pipeline laid on the sea bed from Shanklin IOW to the Normandy coast. The CVA project was to design and make an explosive device to seal the pipeline if enemy action caused it to break while being laid. Normally the pipe, some three inches in diameter, made of lead and soft material was unrolled from a huge drum towed by a specially adapted vessel. The pipe was filled with air under pressure to avoid being crushed by the water pressure on the sea bed. If the pipe was broken, the explosive device fired a metal wedge into the pipe and hopefully sealed it to avoid loss of air pressure and consequent collapse of the whole pipeline. In the event, there was no enemy action and the pipe laying action was completed successfully.[11]

As VE day passed and the end of the war came in sight, Eric Aron considered his plans for the post war period. He reasoned that war surplus machine tools would flood the market except in some specialist areas. Because Hoover and and other makers of domestic hardware had been engaged in war work and the production lines dismantled he thought that if he could get in on this market quickly he could capture a significant portion of the market and keep it. The CVA products that reached the retailers were the "Columbine" vacuum cleaner and CVA electric iron. Both were extremely strong and reliable appliances and initially enjoyed good sales, but they were based on pre-war designs and as soon as Hoover and the other giants got back into production with new designs the CVA cleaner and iron became difficult to sell and were eventually dropped. The many CVA employees who bought them very cheaply together with quantities of spares found that they lasted for many years. A range of alarm clocks was also contemplated, designed by two German Jewish refugees, but the prototypes were not satisfactory and the idea was dropped.

The specialist part of the machine tool market that Eric Aron saw as a profitable line was the production of automatic lathes. Part of the design office had for some time been working on a ½inch capacity automatic very similar to the Brown and Sharpe auto produced in the USA. As soon as the war contracts eased off, the CVA ½inch auto was pushed ahead and a large part of the Company resources was concentrated on producing it (Fig. 13).

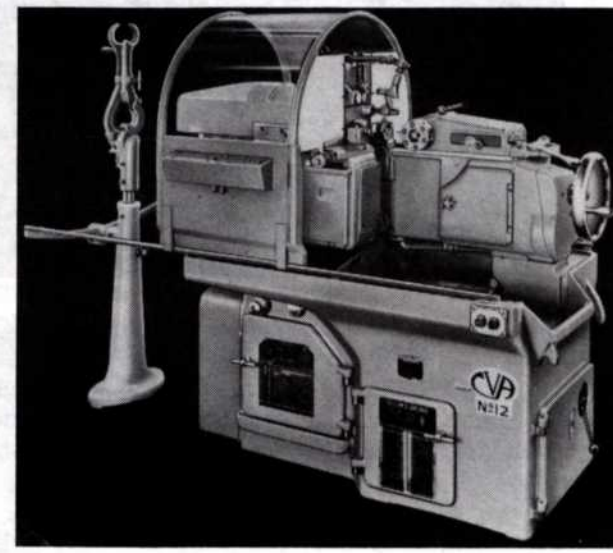

Fig. 13 CVA ½ inch automatic lathe

By early 1946 the CVA ½inch auto was in production and being sold. By the end of the year the ¾ and 1 inch versions were being produced and demand exceeded supply. During 1947 they were being built at the rate of twenty per month and still the waiting list grew.[12] In order to accommodate the auto production the Company had now taken over another factory. The assembly shop was now located in the old army drill hall at Eaton Road near the County Cricket Ground in Hove. Fig. 14 shows the frontage of the factory on Eaton Road in the early 1950s.

Eric Aron had contacts in the American machine tool industry and especially with Kearney and Trecker of Milwaukee. In October 1947, two executives of CVA flew to Milwaukee to liaise with the Kearney and Trecker Corporation regarding a European manufacturing base for Kearney and Trecker products at CVA in Hove. The two CVA executives, Reg Tufnell and Joe Davis, flew in a Boeing flying boat "Bermuda Sky Queen" from Poole harbour bound for Baltimore. The flying boat came down in mid Atlantic just past the point of no return due to headwinds and consequent

Fig. 14 CVA Assembly Shop, Eaton Road, Hove early 1950s

lack of fuel. It landed in a gale and 30 foot waves but the passengers and crew were rescued by a United States coastguard cutter after 24 hours in the waterlogged aircraft.[13] The technical discussions with K&T were completed with no bother and arrangements were made to tool up for production of two models of K&T milling machines at the CVA factory in England. The arrangement was that K&T should supply CVA with drawings of all the jigs, fixtures and tooling for these machines, and that CVA would make them over a period of time; meanwhile K&T would supply the parts which CVA would assemble. K&T also supplied special purpose machines needed for production. It was envisaged that after two years CVA would be making the machines complete including the castings.[14] It did in fact work out as arranged, and within two years CVA were making both vertical and horizontal models of the K&T 2E and 3E milling machines and shortly afterwards other machines in the K&T range.

With the reputation and prestige of the Kearney and Trecker name behind them, the CVA-built K&T machines sold faster than they could be built, and expansion was once more in Eric Aron's mind. A quick expansion of all production facilities was essential to cope with this amount of work and he responded by making the following changes:-

The Portland Road factory was upgraded and expanded including the foundry (Fig. 15).

Production of chucks and spanners was moved from the old brewery at Portslade to the old Diamond works at Coombe Road in Brighton (Fig. 16), which was larger and more convenient.

Two purpose-built factories on the Hollingbury Industrial Estate were taken over.

Finally, the largest undertaking of this expansion in the 1950s was the purchase of a very large plot of land at Littlehampton on the new Lineside Industrial Estate. A modern factory was built on this land and it was equipped as a heavy machine shop.

At this stage it may be useful to list the factories which the Company operated since it started as CAV Small Tools in 1919.

Since the selling agents E.H. Jones will be mentioned for the first time in this list, an explanation of how CVA became involved with E.H. Jones might be helpful.

Fig. 15 Foundry, Portland Road Works following the expansion of facilities in the immediate post World War II period.

Fig. 16 Old Diamond Works, Coombe Road used by CVA in the immediate post war period for the production of chucks and spanners

Most machine tool makers sell their products through an agent for obvious reasons, and CVA had been involved with E.H. Jones for some years when in 1946 Eric Aron took a controlling interest. E.H. Jones continued as CVA's selling agent until the standard machine tool side of the business finally finished in the 1970s. They never handled the "NC", special purpose, or aerospace products, only standard machine tools.

FACTORY SITE	TYPE OF PRODUCTION	DATE
Portland Road, Hove	Main works and office with ferrous foundry.	1919 to 1973
St. James's Street, Kemp Town, Brighton, opposite the junction with Charlotte Street	This was the war time tool room. The building no longer exists; the area having been demolished to build flats.	1940 to 1952
The Old Brewery, Portslade Old Village	This was the war time chuck and spanner shop. The vacuum cleaner and electric iron production was also started here.	1940 to 1946
Eaton Road, Hove, The Old Drill Hall next to the Sussex County Cricket Ground	Assembly factory for the auto and milling machine products. The dieing presses were assembled in the tool room.	1946 to 1969
The Old Diamond Works, Coombe Road, Brighton. The first building on the south side of Coombe Road from the Lewes Road corner.	Chuck shop and spanner shop at first with electrical panel assembly and sheet metal shop later. At one period plastic parts were made here.	1947 to 1973
Hollingbury Industrial Estate, Crowhurst Road. CVA Number 2 factory.	This was the first of the Hollingbury factories occupied by CVA. It was largely a tool room but also housed the dieing press and body die sections.	1952 to 1985
Hollingbury Industrial Estate, Crowhurst Road. Ex Skelton & Sleat	This factory was used for the production of a range of centre lathes made by CVA in the early 1950s. This project was fairly short lived.	1952 to c.1960
Hollingbury Industrial Estate, Crowhurst Road. CVA Number 6 factory	This was the factory built to accommodate the assembly of large transfer machines for the motor industry.	1954 and still in use by the Company
Lineside Industrial Estate, Clun Road, Littlehampton	Heavy machine shop with large normalising furnace	1957 to 1969
Hollingbury Industrial Estate, Crowhurst Road. CVA Number 8 factory.	This was the link between No.2 and No.6 to house the assembly and stores when the Eaton Rd. assembly plant was closed down.	1968 to 1985

There were also two small buildings used by the Company during the immediate post war period but only for a short time. These were:-

Guarantools House, Brambledean Road, Portslade.	A garage building on the corner of Brambledean Rd. and what is now the A259 (Wellington Rd) converted into offices and store and used by E.H. Jones, selling agents for CVA products. This building on the sea front next to the old Kayser Bondor factory still exists and the photograph (Fig. 17) is recent.	c.1949 to 1955
Harbour Garage, Aldrington Basin.	Harbour Garage was one of the small buildings facing onto Aldrington Basin and was used as a welding and fabrication shop from the middle 1940s until the welding was transferred to Hollingbury in 1951. The exact location is lost and the building probably no longer exists.	c.1946 to 1951

As part of the expansion at the Portland Road factory a new office block was built on the Portland Road frontage, and it incorporated a large and impressive reception area with a marble floor, a new telephone exchange, a suite of offices above for the directors and a customers' lounge with its own catering facilities. This customers' area was carpeted and panelled and the whole building was very impressive indeed. The selling agents E.H. Jones, moved from the old Guarantools House on the sea front and were accommodated in this new building.

The photograph of the office block (Fig. 18) was taken soon after it was completed and it can be seen from the sign on the front that E.H. Jones had already moved there from the old garage building at Portslade.

The two new factories at Hollingbury were on opposite sides of Crowhurst Road. The small building on the north side had been built for Skelton and Sleat but was never used by them; CVA took it over and installed the centre lathe production there but it was only occupied by CVA for about seven years after which it became part of the Creed complex. The building on the south side was purpose built for CVA and is a large and impressive building. It was built as a tool room to replace the Kemp Town factory which was closed in 1952. The CVA dieing press was produced here also the automobile body dies, and the first of the transfer machines was built here before the CVA No. 6 factory was built.[15] The ex CVA No. 2 factory (Fig. 19) has now been sold to Southern Publishing as part of the new complex to print the *Evening Argus* and other newspapers. The ground plan of the Hollingbury

Fig. 17 Garage building on the corner of Brambledean Road, Portslade used by E.H. Jones c.1949-55

Fig. 18 CVA office block, Portland Road soon after completion c.1955

Fig. 19 CVA No. 2 factory, Hollingbury Industrial Estate, completed 1951

Fig. 20 CVA No. 6 factory, Hollingbury Industrial Estate,
completed 1954 and extended 1962

Industrial Estate in *Sussex Industrial History* 21 (1991) shows the position of the three CVA factories, two of which will be mentioned later, as well as the ex Skelton and Sleat factory which CVA used for a time. As the production of K&T mills increased, Eric Aron found difficulty in obtaining the electrical control panels for these machines to his specification and with a reliable delivery. To ensure that production was not held up by lack of electrical panels, he started an electrical panel manufacturing department at the Coombe Road factory. This panel shop grew as milling machine production increased and until the 1970s when computerised machine centres became the main product, this panel shop supplied the panel electrics for the whole range of the Company products.

In the early 1950s there was a great demand in the motor industry for transfer machines. These are large machines sometimes 60 to 80 feet long, upon which components such as cylinder heads or gearbox casings are machined from start to finish without human intervention; being passed from operation to operation by a system of transfer bars, usually hydraulic, and with automatic clamping of the component and the operation of the machining stations effected by electro-mechanical control. CVA entered production of these in 1951 and in that year built their first transfer machine at No. 2 factory at Hollingbury for the Ford Motor Company. This was a comparatively small machine and it was realised that in order to take advantage of the market potential, CVA must have a much larger factory for transfer machine assembly. Land on the Hollingbury Industrial Estate was made available, and CVA No. 6 factory was completed in 1954 as a manufacturing base for special purpose machines. Sales of special purpose transfer machinery increased sharply and in 1962 an extension was built on to No. 6 factory. It is this factory at Hollingbury which is now used by FMT who are the successors to CVA and still manufacture machine tools (Fig. 20). This enormous programme of expansion was in part funded by Kearney & Trecker in America, and the Company was now known as Kearney & Trecker CVA. The American Company had been investing in CVA since 1957.[16]

Sales of centre lathes and some of the older lines manufactured by the Company began to decline, and in the middle 1950s most of the older types of machine tools were either discontinued or sold to other manufacturers. The chuck department was sold en-block to Israel and CVA personnel went out with the machinery to set it up in Tel Aviv, early in 1964.[17]

The situation in 1956 was that CVA had five main types of product, these were:-

The range of CVA automatics.
The range of K&T milling machines.
Jigs moulds tools and dies, plus the chucks.
The range of dieing presses and 1A lathes.
Transfer machinery.[18]

By 1955 the number of major castings and fabrications needed to maintain this programme was far larger than the facilities then available could provide, and a new factory to be used as a heavy machine shop was built on a green field site at Littlehampton. This factory was laid out and equipped to produce all the finished machined major parts for the Company programme. Heavy travelling cranes were built into the fabric of the building and special machinery and tooling was provided for semi-flow line production. The factory building was very modern in its concept being steel framed with alloy cladding and a large area of glass. It stood on a very large plot of land and included a gate house, a building for a normalising oven and a separate canteen and surgery. Although no record exists, it was widely said at the time that the intention was to bring all the Company manufacturing facilities into one complex, and the size of the plot land does suggest that this was indeed the case. In the event it was said that the lack of skilled labour in the Littlehampton area, and that fact that people from Brighton disliked having to make the journey each day, stopped the project going any further. The fact that the site was only just above sea level also made it a bad place for a foundry using floor moulding. The photograph of this factory shows the interior with the machinery installed (Fig. 21). The site photograph shows the outbuildings and gives some idea of the size of the plot (Fig. 22).

A hint of things to come in the machine tool industry was the advent, in the early 1950s, of the machine control system known as "NC" or Numerical Control. The technical details of the system are very complex, but it is simply an electronic method of operating the machine controls (feeds and speeds) in response to signals on a tape, thus making the machine capable of performing complex operations quite automatically without an operator, K&T CVA were in the forefront of this innovation and in the 1950s produced a number of the larger K&T milling machines with "Add on" "NC" packages for various customers particularly in the aircraft industry. The real breakthrough in "NC" machine tools however came in 1959 when K&T in America produced a purpose built machine which changed its own tools when running and had a tool magazine which carried 15 pre-set tools. One of these machines, the Milwaukee-Matic Ea was installed at Littlehampton in 1965, to be followed by much larger machines of the same type. The photograph (Fig. 23) shows these machines producing large castings

Fig. 21 CVA Littlehampton factory interior 1957

Fig. 22 Exterior view of CVA Littlehampton factory 1957

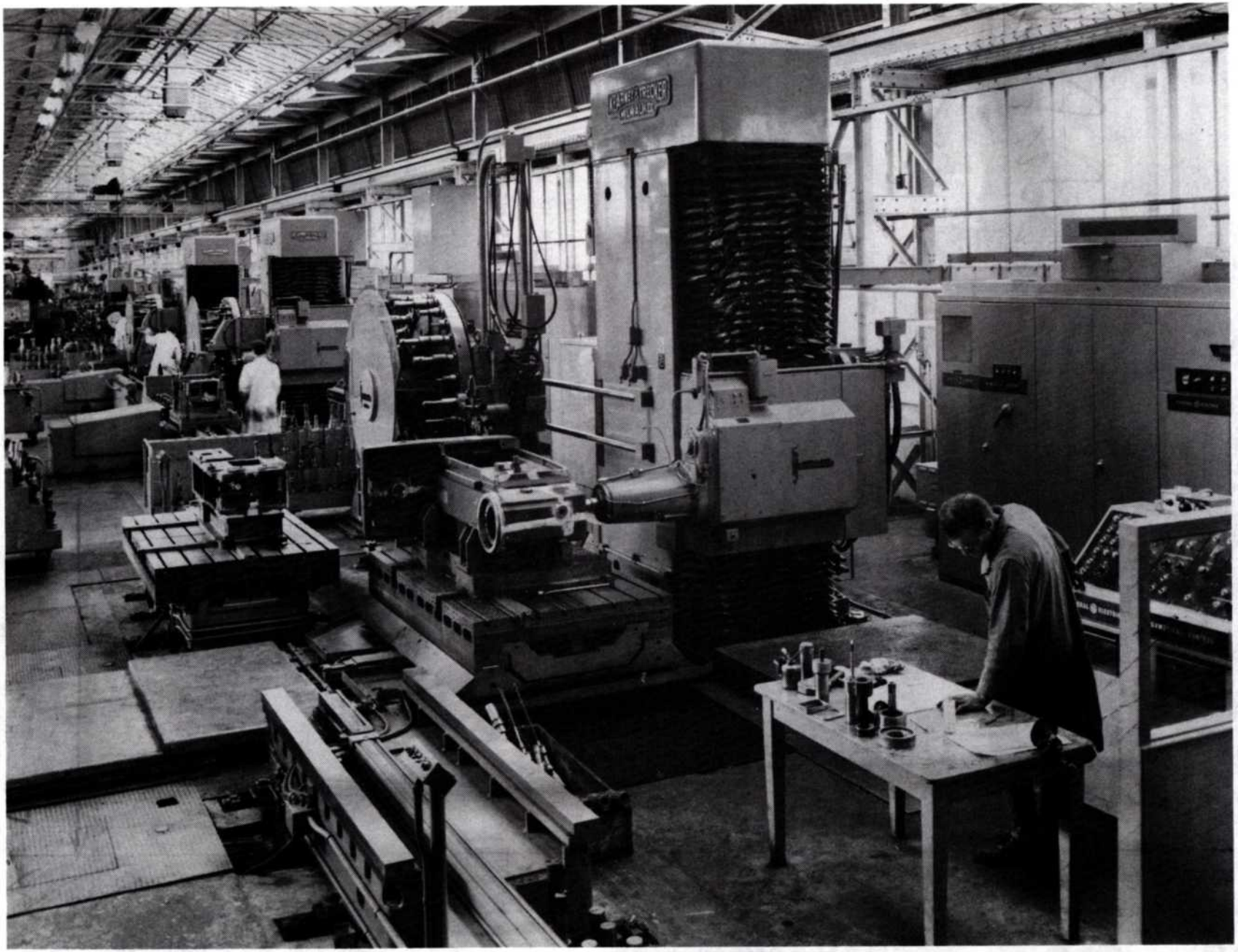

Fig.23 Kearney & Trecker (Milwaukee) "NC" machines machining castings – Littlehampton factory

machined on all faces, for the K&T range of mills.[19] The success of these "NC" machining centres with their great accuracy independent of human error and with predictable time cycles for operations, sounded the death knell of the conventional machine tool except for special operations or small scale production. Conventional machines were being discarded as old fashioned technology and Kearney & Trecker CVA began to manufacture machining centres starting with the Mil-matic Ea in 1967. This was the start of high technology in the Company; a clean air assembly room was set up at Portland Road with controlled temperature and humidity and filtered air. Production was scheduled and monitored by Critical Path Analysis, a computerised method pf project production control which originated in America for the Polaris missile project. A computer (IBM 1620) was installed for the CPA system and to programme the control tapes for the "NC" machines.

In 1969 as part of a plan to consolidate all departments at Hollingbury, the assembly plant (No. 5 factory at Eaton Road) used by the Company since 1947, was closed and a new assembly and stores area built at Hollingbury.[20] This new building connected the existing No. 2 and No. 6 factories and made a very large complex indeed. The photograph showing this building and full details of the whole complex are in *Sussex Industrial History* 21 (1991).

By 1970 the production of "NC" machines had increased and the Mil-Matic Ea was joined in production by a larger machine the Mil-Matic H60. The CVA part of the Company name had now been dropped and from November 1968 it was known as Kearney & Trecker, the same as the American parent company. The building of transfer machines for the motor industry was now a large part of the Company business. These machines, designed and manufactured at Hollingbury, were exported world wide to customers in places as diverse as Australia, Mexico, and Eastern Europe as well as large orders for almost all the U.K. manufacturers. In the 1970s transfer machines reached their peak of efficiency and sophistication. Many were very large indeed as Fig. 24 shows.

At the same time that the assembly plant was moved to Hollingbury, the heavy machine shop at Littlehampton was closed and the plant and machinery moved to Hollingbury. There were a number of reasons for this. Standard milling machine production was diminishing and the expense and difficulty of transporting the workforce to and fro every day and paying them for travelling time were the prime considerations. It was also true that the more modern plant now installed took up less space.[21] The iron foundry at Portland Road which had been there since 1927 was affected by the change of the Company products. The special purpose transfer machines and to a large extent the "NC" machines, had major parts made from welded fabrications rather than iron castings, and with the reduction of the numbers of conventional machines produced, the foundry was uneconomic and was also a very noisy and dirty place in what was now largely a residential area. The foundry was closed and the castings required for production were obtained from outside foundries. By 1973 the Portland Road factory was completely closed as was Coombe Road, and the whole production of the Company was consolidated at Hollingbury. Seeboard purchased the Portland Road site and demolished all the factory buildings including the beautiful office block with its marble floor and panelled suites. It is now the local Seeboard workshop and stores with offices and car parks.

At the beginning of 1973 the CVA automatic range of machines and the CVA dieing presses had been sold to other manufacturers and the products of the Company were:-

Transfer machines
Motor body dies
Tooling
"NC" machines
K&T milling machines

In July 1973 the Company took over the Leicester manufacturers Marwin Machine Tools Ltd. who were builders of routing machines for the aerospace industry. The Marwin works at Leicester was progressively run down, and production was transferred to Hollingbury. The Company now became Kearney & Trecker Marwin and the logo KTM was used for the business title. At this time the Department of Trade and Industry arranged for the Vickers organisation to advise KTM on the future management of the Company, and for the Secretary of State to provide essential capital. This in effect allowed KTM access to the management expertise of Vickers and also provided money for the expansion.

The advent of large aircraft had created a demand for a new type of aircraft component machined from a solid block of light alloy material. The only economical way of machining these large wing spars and similar parts was to hold them on a vacuum chuck and machine them on huge high speed routing machines with all the machine movements tape controlled. Marwin had the expertise to make this type of machine and by 1978 the body die and special tooling part of the business had been disposed of and the three manufacturing divisions of the Company were:-

Special Purpose Machine Division
Numerical Control Division
Standard Machine Division

By 1976 KTM had become a subsidiary of Vickers Ltd., and as the demand for conventional milling machines and transfer machines diminished in the late 1970s the Company concentrated on the production of "NC" machining centres and of aerospace routing machines both of KTM design. It is interesting to note that in the late 1960s some of the main components of Concorde were made complete on Marwin high speed "NC" routing machines at Filton, and it was estimated that many of these components were machined in a quarter of the time that would have been taken by conventional methods.[22] Some of these routing machines are very large indeed and one built by KTM at Brighton in the early 1980s for the European Airbus is 66 metres long (the length of three cricket pitches) and 3½ metres wide. The machine is completely controlled by a computer numerical control on each of the gantries and it weighs 530 tons which makes it one of the largest of modern machine tools. Fig. 25 shows a view of the machine installed at British Aerospace.

In the 1980s the concept emerged of machine shops and motor product lines completely computer controlled with machines loaded and unloaded by robots and the components transported by computer controlled wire guided vehicles. These product lines are operated entirely without human intervention and the whole unit is monitored by a master computer which reports any malfunction of machine, robot or vehicle, and also monitors the quality of each component and alerts the controller to rectify where necessary. It was this type of concept which provided work for KTM through the 1980s and into the 1990s.

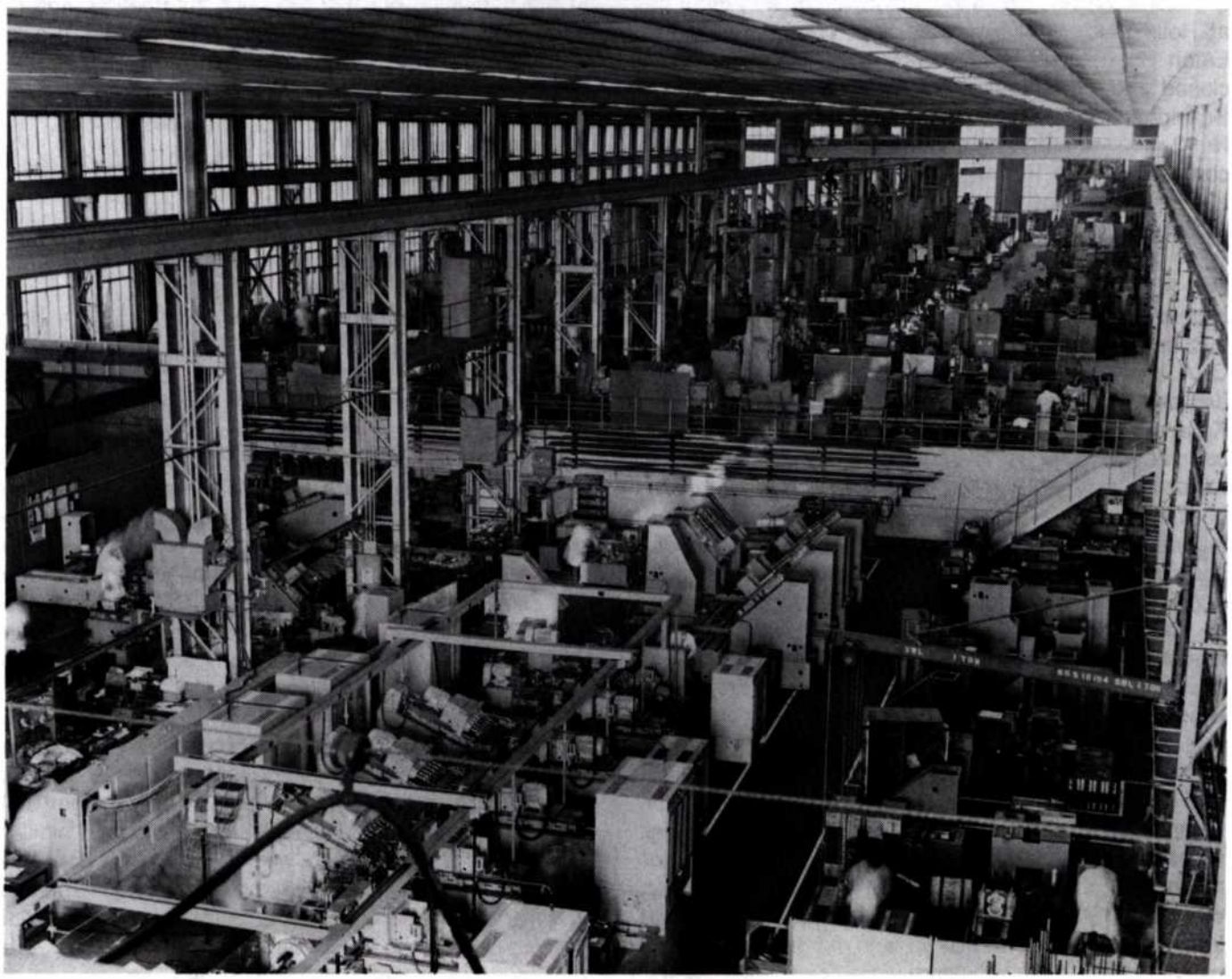

Fig. 24 Manufacture of transfer machines at the Hollingbury Works of Kearney & Trecker c.1970

Several large projects of this type were designed, manufactured, and installed; KTM taking responsibility for the mechanical side of the project as well as computer hardware and software. Because of the world recession and the difficulties which faced the European motor and aerospace industries, the Company now known as FMT has had to slim down its operation. The two factories known as No. 2 and No. 8 at Hollingbury have been sold to Southern Publishing who produce the *Evening Argus,* and FMT is now based in the factory built at Hollingbury for transfer machines and known as No. 6.

FMT is no longer a Vickers company being the subject of a management buyout a few years ago, but it has recently bought the Gateshead firm of Noble & Lund, manufacturers of large plano milling machines; also Kearns-Richards of Salford, makers of horizontal and vertical boring machines. Having access now to this new range of customers, it is to be hoped that the Company will continue to manufacture machine tools in the Brighton area for many years to come.

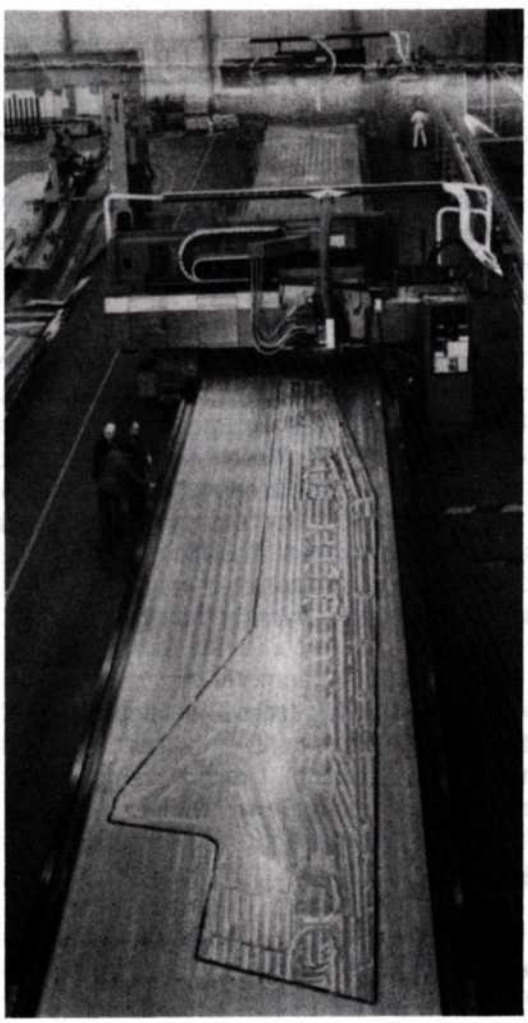

Fig. 25

ACKNOWLEDGEMENTS

My grateful thanks to the following people for their information, documents, and photographs:-

Messrs A.Walder, C.E.Johnstone, A.F.Back, G.Ross, R.Stearman, N.J.Foord, J.R.Tomkins, K. Hobden and all the other ex CVA people who have written about the Company.

My thanks also to Messrs. R.C. Brotherton and A.J. Wickham directors of FMT who have approved the text and produced interesting facts from the Company records.

I am very grateful to John Land LRPS at the Amberley Chalk Pits Museum for performing miracles in copying illustrations from tattered 60 year old magazines and making them suitable for reproduction. Also to Jonathan Minns Director of the British Engineerium for permission to examine and copy old engineering magazines in his library.

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5. I am indebted to Mr. L.E. Brookes for this information. Mr. Brookes was Mr. Aron's works manager from 1934 to the middle 1950s.
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7. I am indebted to Mr. A.E. Bayly who was in charge of the department at that time as works superintendent.
8. *New Era illustrated* 1933
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10. A.G. Elliot, *Another Portrait of Portslade*
11. I am indebted to Mr. L.E. Smith who was the jig and tool designer in charge of these projects.
12. I am indebted to Mr. T. Corcoran who headed the technical sales for the auto's at that time.
13. I am indebted to Mr. T.G. Davies who was chief draughtsman at that time and was one of the CVA people who came down in the flying boat in mid Atlantic.
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15. Information from L.E. Smith
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ESTATE BUILDINGS AT BROOK HOUSE, WEST HOATHLY

Brook House is a substantial mansion largely built during the last quarter of the nineteenth century by the Clarke family. The following articles outline the history of the family and the business that they operated. This is followed by detailed surveys of two notable estate buildings, a game larder and a gas house. To conclude there is a description of an acetylene gas producing plant formerly at Horam Church Hall which would have been similar to the one at Brook House which has not survived.

BROOK HOUSE AND ITS OWNERS

Pat Bracher

Stephenson Clarke inherited a business which had once been thriving but which had dwindled to almost nothing. For three generations his family had owned a fleet of collier brigs bringing coal from the Tyne to London. They were members of the Coal Factors Society of London which they had helped to found in 1769. The Coal Factors were brokers, buying from the collier masters and selling to the coal merchants.

Stephenson's father, although a conscientious worker, was not a good business man and had failed to see the impact railways, canals and steam would have on the colliery trade. Beginning with money borrowed from relatives Stephenson Clarke rebuilt the business, known from that time as "Stephenson Clarke". Stephenson was his grandmother's maiden name. When he died in 1891 he left nearly £1,000,000.

A great sportsman, with homes in London, Croydon and Scotland, Stephenson Clarke rented Brook House, then a small, timber-framed 16th century building, as a shooting lodge in 1877 and although he greatly enlarged it in 1879, he never regarded Brook House as his home. It was not until his death in 1891 that his widow moved permanently to Brook House from Croydon Lodge.

The Stephenson Clarkes had fourteen children, born between 1862 and 1891, and thirteen of the children moved to Brook House with their mother. The eldest son, Stephenson Robert, bought some 7,000 acres of land around Brook House, mainly for the shooting. He made Borde Hill his permanent home and created the garden and the arboretum.

Three of the children who did not marry made Brook House their home and many of the married ones and their families often stayed there for months at a time. The southern wing was added by Mrs. Stephenson Clarke to accommodate them all. With the help of fourteen gardeners she enlarged and improved the gardens. Mrs. Stephenson Clarke lived at Brook House until she died in 1921.

By the middle of the 19th century, in addition to carrying domestic coal to London and the south coast ports, there was a huge demand for coal from the gas companies. Many found it economic to build their own colliers and as well as owning their own fleet, Stephenson Clarke managed many of these.

At the same time the transition was made from sail to steam, from wooden ships to iron, and later steel, and these ships could make three times as many trips a year as the sailing ships, although the east coast was still treacherous and continued to take its toll.

The firm of Stephenson Clarke expanded rapidly, both supplying and carrying coal to the gas and later the electricity companies. Stephenson Clarke became a director of the Gas, Light and Coke Company, a lessee of Wandsworth Gas Works and was involved with the development of many overseas gas companies.

In 1872 the "Shoreham" of 750 tons carrying capacity was bought, the first of the Stephenson Clarke fleet to bear a Sussex name, a tradition carried on for many years. The "Shoreham" carried coal for the Brighton and Hove Gas Company until she was sunk in a collision in 1888.

After Stephenson Clarke's death the company continued with the two eldest sons as heads of the firm. Powell Duffryn was brought into partnership at this time and in 1928 Powell Duffryn acquired the whole of the ordinary share capital of the company. By 1928 the organisation was the largest distributor of British coal, owning and managing a large fleet of ships and the biggest fleet of privately owned railway wagons in the country, bearing the logo "S.C." in large white letters.

The company still exists today, as "Stephenson Clarke Industrial Fuels Limited, Distributors", and "Stephenson Clarke Shipping Limited", shipowners and agents, parent company Powell Duffryn.

SOURCES:

Peter Cox, *A Link with Tradition, – the story of Stephenson Clarke Shipping Limited 1730-1980* (1980)

The Stephenson Clarke Fleet Story 1730-1958 (nd).

Booklet containing a reprint of two articles which appeared in January and February 1958 issues of *Sea Breezes*.

Family history from a series of unpublished typescripts by Col. Sir Ralph Stephenson Clarke, KBE, TD, DL (1892-1970). No date.

All the above were kindly lent to SIAS by Mr. R.C. Satchell.

My thanks to Joyce Crowe and the staff at the Sussex Archaeological Society Library, Barbican House, Lewes, and to Mrs. Gill and her staff at West Sussex Record Office.

THE ESTATE BUILDINGS

Ron Martin

GAME LARDER (TQ 356292)

The Brook House estate had some 7000 acres of shooting land and the game larder was built to accommodate the resulting dead birds. It was probably built some time after 1895 and is 5.65 x 8.08 m internally with two windows and a door opening on each side and a simple gabled roof.

The walls up to window cill level are 380 mm thick with hammer-dressed regular coursed sandstone rubble facing with chisel drafted margins probably from the Phillpott's quarry on the estate. Curiously, along the north and south sides there is a break in the coursing with pieces of stone rebated to accommodate the broken courses.

The structure of the superstructure is quite remarkable. The wall thickness is only 70 mm with dovetail corrugated steel sheeting supported by 32 x 32 mm H-section vertical members, lime plastered internally and rough cast rendered externally. These members are at approximately 1 m centres but are only visible along the north wall. There are 30 x 120 mm oak cover fillets externally to give a "half timbered" appearance. Until further work is done to expose the structure the exact spacing and sizes of the various members is conjectural.

The roof is supported on conventional steel trusses at approximately 2 m centres, there being a 300 mm long steel angle spreader under the end of each truss. The location of the window openings does not attempt to avoid the bearings of the trusses. The roof is of similar construction to the walls with the 32 x 32 mm H-section members at 840 mm centres spanning between trusses and the steel sheeting running down the roof slope and plastered internally. The 25 x 50 mm tiling battens are fixed to the upper side of the sheeting with screws driven from the soffit through the sheeting.

The roof is covered with diamond pattern concrete tiles although part of the west slope has been replaced by corrugated asbestos-cement sheeting. This pattern of concrete tiles is rare in England and derives from those invented by Adolph Kroher and used in various parts of Germany since 1849. Various other people had taken out patents for similar tiles notably J.P. Jörgensen and Ludwig Nichol of the Reising Company. Their tiles came to England in 1895 and buildings in Caterham and Minehead were covered in tiles made on German machines.[1] Examples of this type may also be seen on the administrative building at the Amberley Chalk Pits Museum where presumably Pepper made them under licence.

This being a game larder there are 10 x 50 mm steel rails fixed to the bottom of the roof trusses at 300 mm centres with hooks at 300 mm centres on which to hang the game. There are two internally opening two-light oak casements along each side with external louvred shutters. In each gable end there are smaller casements with fixed louvres, now missing. There are also three 225 x 150 mm cast iron air bricks along the east and west sides.

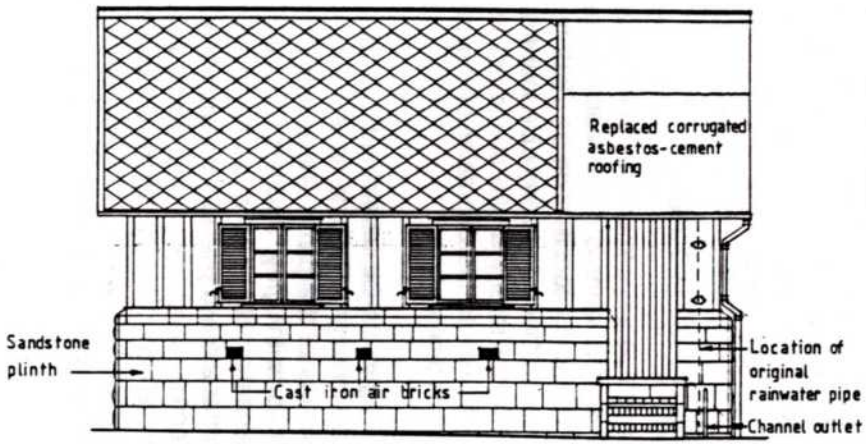
The remarkable thing about this building is that in spite of the flimsy nature of the wall and roof construction there are no signs of distress. There is some damage caused by water penetration and rusting to the steel sheeting has occurred. Restoration will be a difficult task as any attempt to repair any damaged portions will possibly destroy the structure itself.

GAS HOUSE (TQ 356292)

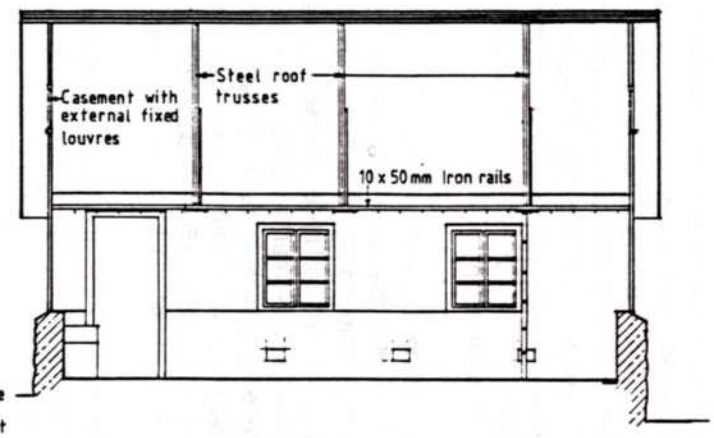
It is not possible to determine the exact date of the gas house but there is a reference in some of the family papers to its construction as 1882 but qualified with a question mark.[2] It is probable that the gas house does not relate to any of the phases of the construction of the house as the character of the brickwork and roof tiling is different.

The gas house contained the plant for producing acetylene gas for use in the house. There are no remains of the plant. The building is built in local red bricks with grey headers and is 3.45 mm square internally. There is a plinth all round and at each corner are two pilasters on each face. The walls are in Flemish bond above the damp-proof course and in English bond below. There are oversailing courses at the top of the wall with a diagonal corbel course. In the centre of the south elevation are the double entrance

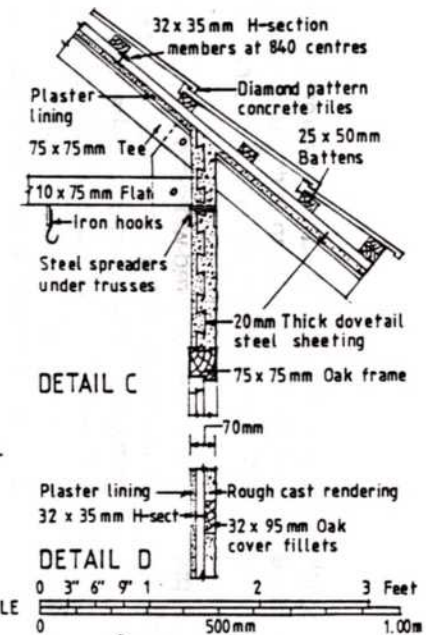
WEST HOATHLY
BROOK HOUSE ARDINGLY *GAME LARDER*

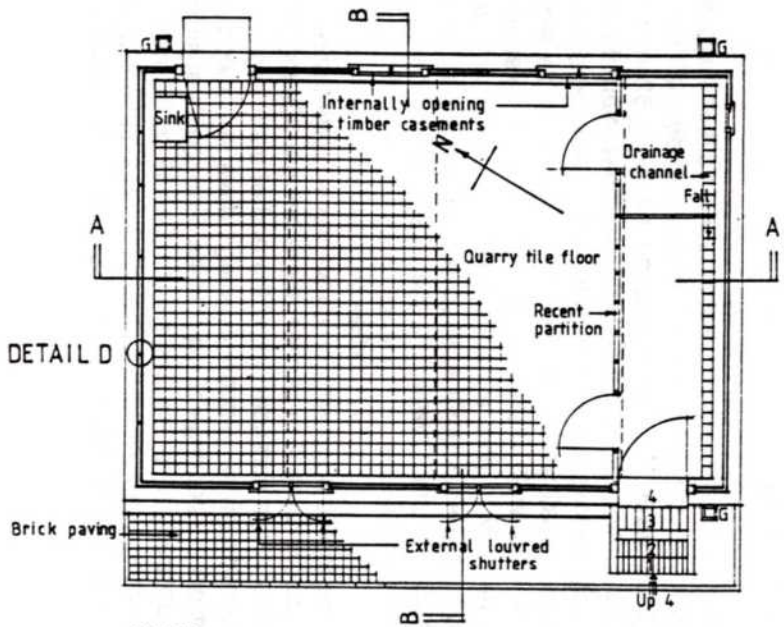


WEST ELEVATION

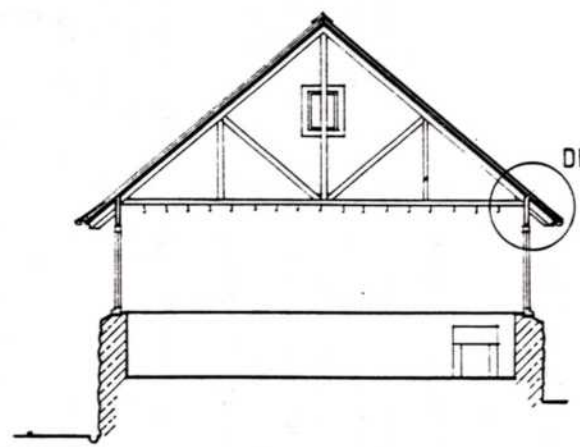


SECTION A-A





PLAN



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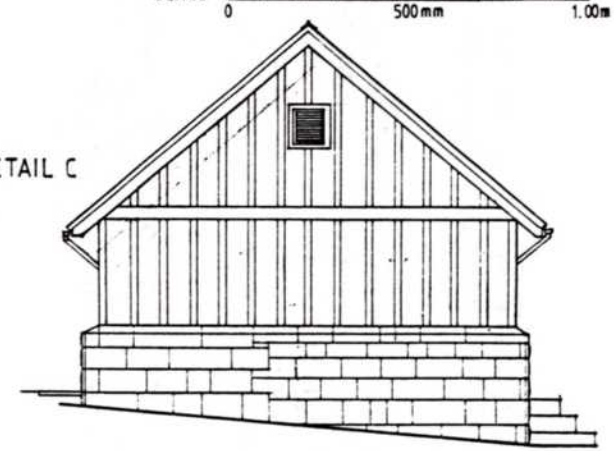

NORTH ELEVATION

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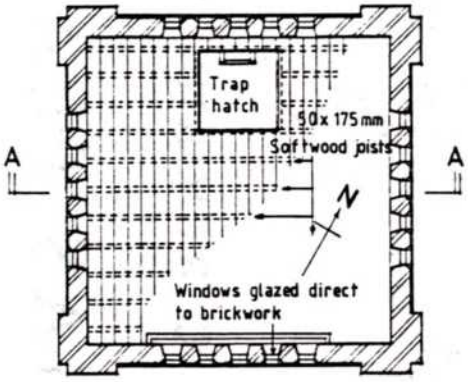
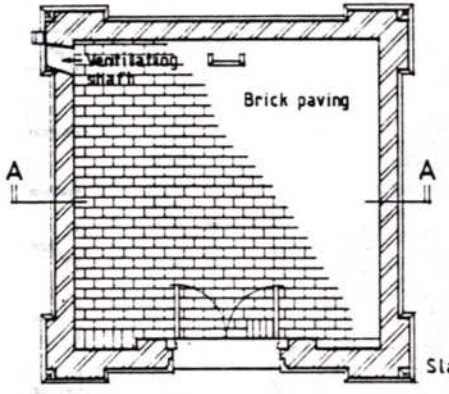
WEST HOATHLY
BROOK HOUSE ARDINGLY

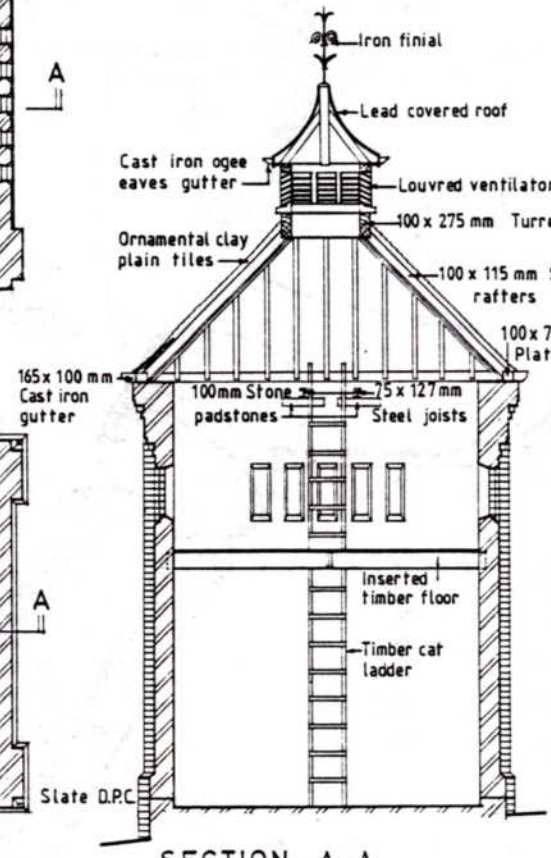
CARBIDE HOUSE



FIRST FLOOR PLAN



GROUND FLOOR PLAN



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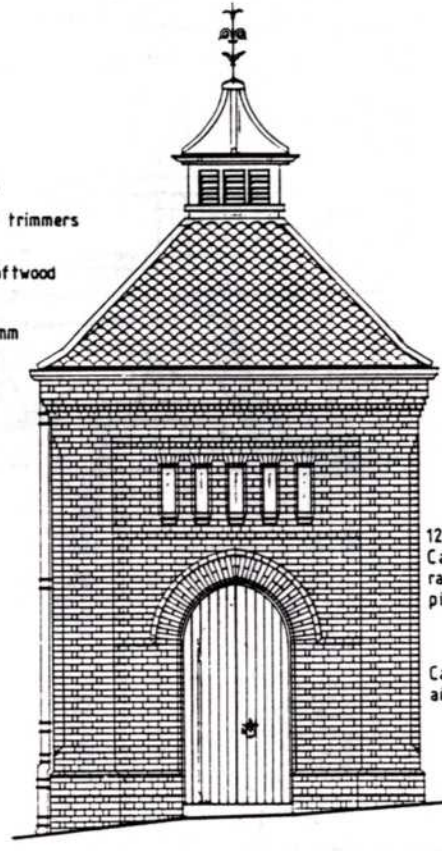
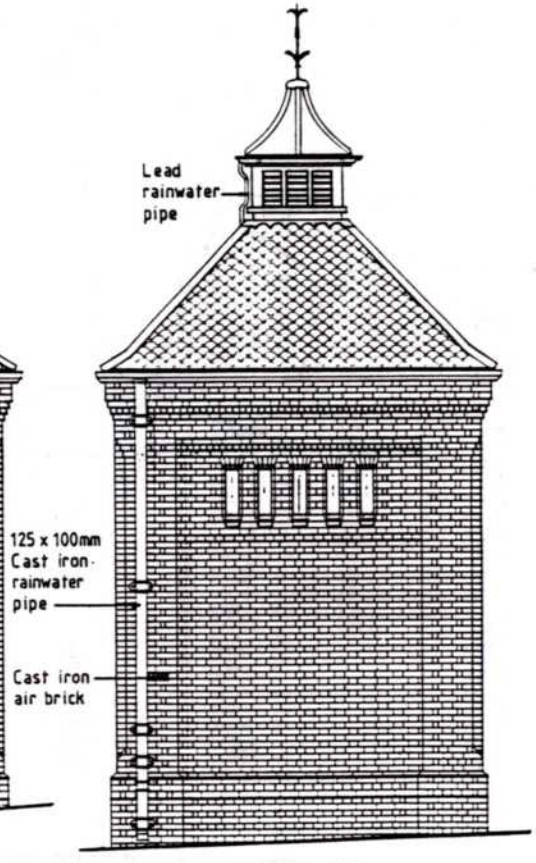


SOUTH ELEVATION



WEST ELEVATION

SCALE

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 Feet

0 1 2 3 4 Metres

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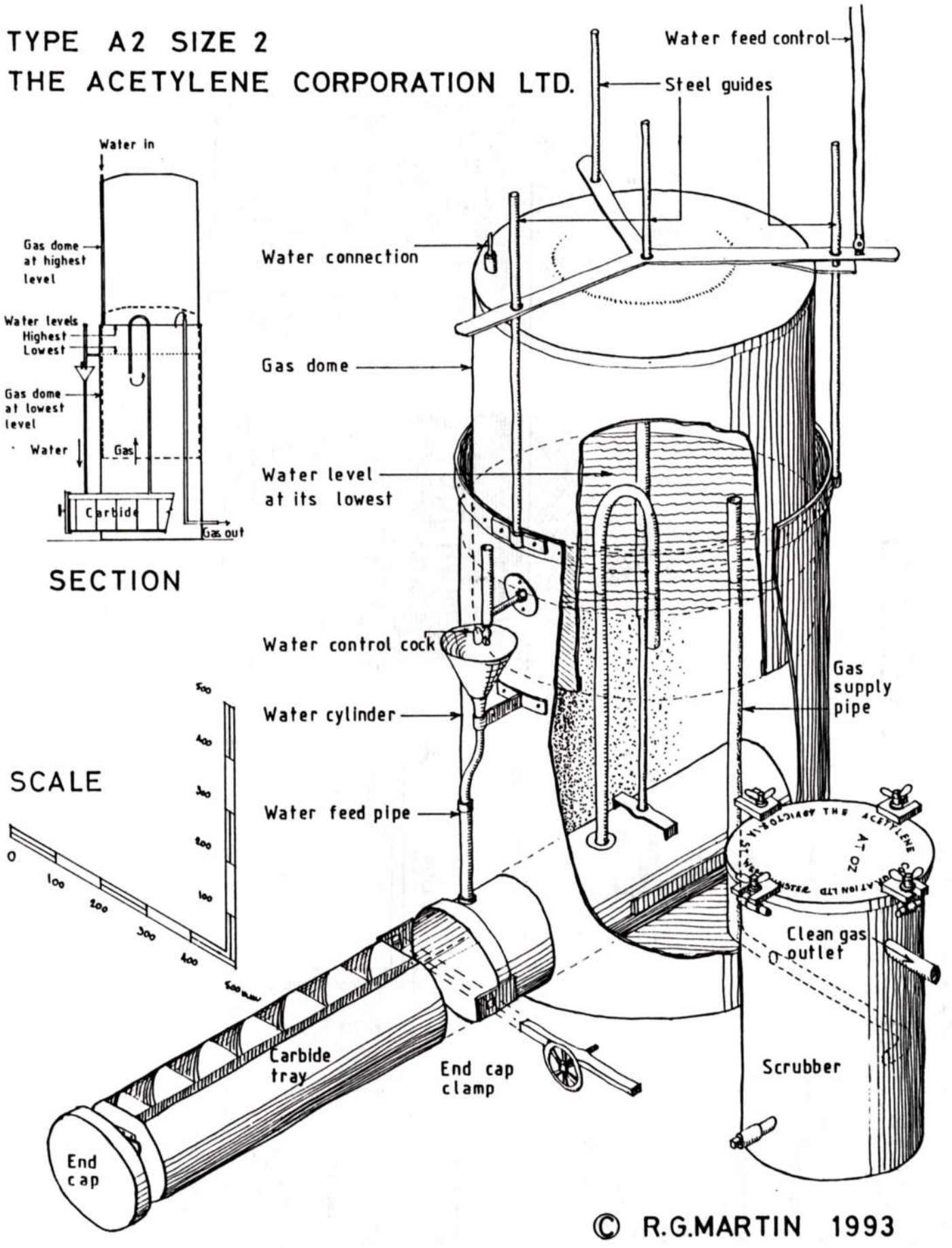

ACETYLENE GAS PLANT

FROM HORAM CHURCH HALL

doors with recessed gothic arched head. On each elevation at high level is a row of five slit windows with splayed cills and flat arched heads. The arches to the door and windows are all of rubbed and gauged brickwork. The standard of brickwork throughout is of the highest quality and the bonding is always meticulous. There are two parallel 75 x 127 mm steel joists built into the top of the north and south walls. The purpose of these beams is not known but it would appear that they are part of the original structure, possibly to support the water tank.

The ground floor is of paving bricks laid flat with a stone threshold to the door opening. There is a first floor comprising 50 x 127 mm softwood joists with softwood boarding and an access hatch and cat ladder. It is assumed that all this is a later insertion.

The roof is pyramidal with a ventilating turret and comprises softwood framing of 100 x 75 mm wall plate, 50 x 115 mm rafters and 50 x 175 mm hip rafters pitching onto a 100 x 275 mm trimmer to the turret opening. The main roof is covered with decorative red clay nibbed plain tiles hung on battens. The gutter is a cast iron box gutter sitting partly on the wall and abutting the roof plate. The 127 x 100 mm cast iron rectangular rainwater pipe is missing.

The turret roof has 50 x 75 mm rafters, with a 100 x 100 mm centre post. The turret openings are filled with fixed louvres and the roof is a concave pyramid covered with sheet lead on boarding with rolls. There is a cast iron ogee eaves gutter and the roof is topped with a wrought iron decorative finial.

There is a 50 mm underground pipe from the south-west corner of the building running eastward towards the stable block, presumably the gas feed pipe.

The condition of the walls is excellent. However the roof tiling is showing signs of distress and as a result of this and the unsatisfactory detail where the roof plate abuts the back of the eaves gutter there is damp penetration and the plate and rafter feet will need to be renewed.

It is remarkable that such an elaborate little building should have been built for such a mundane purpose as producing gas particularly as it is situated in the kitchen garden behind the stables where the owners of the house and their guests would not normally be.

REFERENCES

1. Charles Dobson, *The History of the Concrete Roofing Tile* (1959)
2. An unpublished manuscript probably by William Browning. No date

ACETYLENE GAS PLANT FROM HORAM CHURCH HALL

W.R. Beswick

Although the Brook House acetylene generator no longer survives and no description exists of the plant it may well have been similar to that from Horam Church Hall described below.

Acetylene gas, C_2H_2, is a colourless and poisonous gas with a high calorific value and which burns with an intense white flame. Up the 1920s the gas was much used for marine buoys, car and bicycle lamps, country house and church hall lighting and for oxy-acetylene welding. Acetylene evolves if water is brought into contact with calcium carbide. One pound of carbide and just under one gallon of water will produce five cubic feet of gas and provide the equivalent of 140 standard candle power.

A typical plant to make such gas was the installation used up to the 1950s at the Church Hall at Horam in East Sussex and which was removed by members of the Society some years ago. This unit will take a charge of 12 lbs of carbide and supply gas at a pressure of about two pounds per square inch. This pressure can be varied by adding or removing weights from the gas holder dome. The manufacturers were The Acetylene Corporation Ltd. of 49 Victoria Street, London, S.W.1 and the model is their type A2 size 2. It is now at the Gas Museum, Old Kent Road, London.

As will be seen from the drawing, the plant consists of a single lift water sealed gasholder into the base of which is built the gas generator. Water, controlled by a cock is fed into a tundish from the main cylinder into the removable carbide container. As the gas is produced and the dome lifts, a simple device cuts off the water supply from an overhead tank and in this way the plant responds automatically to demand. There is a separate vertical scrubber to remove dust and moisture prior to distribution. This has a removable cast iron top plate and the contact material appears to be a mixture of carbide chips and spent bleaching powder. The whole plant is fabricated in galvanised mild steel sheet and suitable isolating and test cocks are provided. The plant requires about ten feet square of floor space and stands about six feet high. Further dry housing would be required for the storage of the sealed drums of carbide. It should be noted that the interconnecting as well as the distribution pipework is in galvanised steel. This is essential due to the corrosive nature of acetylene gas. Copper piping for instance would never be used.

SOME NOTABLE WINDMILL AUTHORS AND HISTORIANS OF THE PAST

Nick Nicholas

A Sussex Mill bibliography was published in *Sussex Industrial History* 22 (1992). Readers may find the following brief biographies of some of the more notable writers included in the listing of some interest.

MARJORIE I. BATTEN, the first Windmill Secretary of the then Windmill Section of SPAB wrote *English Windmills* Vol.1 in 1930 for the Society which was published by the Architectural Press, London. The book dealt with the counties of Surrey, Kent and Sussex. Donald Smith wrote "English Windmills" Vol. 2 in 1932 covering the Home Counties. It was the intention to publish a series of books by county, but the books did not sell well and were remaindered. Finance was not available to continue with the project.

ALLEN CLARKE, 1836-1935. Allen Clarke was born in Bolton in 1863. His parents were both cotton workers, and he too started work in the mills at an early age. From 1906 he settled in Blackpool and went on to become one of Lancashire's most loved writers as "Teddy Ashton", author of dialect sketches and poetry. He also wrote over 20 novels.

Windmill Land is Allen Clarke's classic account of the Fylde windmills, first published in 1916 and reprinted in 1986 by George Kelsall, Lancashire. He also wrote *More Windmill Land* published in 1932, and *Windmill Land Stories*. His *Moorlands and Memories*, a companion volume to *Windmill Land*, with descriptions of the Lancashire countryside, is also once again available after many years out of print. Allen Clarke died in Blackpool in December 1935.

WILLIAM COLES FINCH. Born in the 1860s and died in the 1940s, he was in charge of the water company in Chatham, Kent. His address was "Waterworks House". Dorothy Wright, his daughter, was still living in Chatham in the late 1970s. Coles Finch wandered around the Kent countryside in the early part of this century collecting information, interviewing milling families, and amassed a vast photographic collection. His monumental work *Watermills and Windmills* containing historical and photographic records of 410 Kentish Windmills was published in 1933 by the C.W. Daniel Company, London. It is of interest that the published price was then 15/- (£0.75), but c.1938 it was remaindered at 7/6d (£0.37½). A first edition on the secondhand book market can prove quite costly, if located. A reprint appeared in 1976 produced by Arthur Cassell of Sheerness, Kent. It was this last that prompted BBC Radio Medway to produce an hour long documentary called 'Sweeping Changes, The Windmills of Kent'.

His other books included *In Kentish Pilgrimland*, *The Lure of the Countryside*, *Life in Rural England* and *The Medway River and Valley*.

STANLEY HARMAN FREESE, 1902-1972. His interest began on holiday at Darsham, Suffolk in 1923. He cycled all over the British Isles sketching and photographing mills. He lived at South Heath near Great Missenden in Buckinghamshire and retired to Wenbaston, Suffolk in 1964 where his interest in Suffolk Windmills was to continue. In collaboration with R.T. Hopkins *In Search of English Windmills* was published in 1931 by Cecil Palmer, London. *Windmills and Millwrighting* appeared in 1957 published by the Cambridge University Press, and was later reprinted by David & Charles in 1971. He collaborated with Brian Flint in the completion of a book on Suffolk mills and his contributions are now included in *Suffolk Windmills* by Brian Flint published by the Boydell Press, Woodbridge. His other book was *The Ten Year Plan*, published by Cecil Palmer in 1932.

HERBERT EDWARD SYDNEY SIMMONS, 1901-1973 Born at Washington, Sussex, he worked for many years at the Ministry of Defence. During the War years he served in the RAF, being stationed in Warwickshire and East Anglia. He died in Shoreham-by-Sea, Sussex, his home for many years. His vast collection of some 240 folders of typed notes and approximately 300 maps, all arranged by county, were given to the Science Museum Library by Mrs. Simmons in 1974. It is complemented by about 2000 negatives which he prepared during his travels.

His intention was to produce a book on Sussex Windmills, and to this effect he published a list in *The Sussex County Magazine* of some 400 sites he had located. The book sadly never materialised, but of course the survey and historical notes can be consulted in the Science Museum Library. He wrote several articles on mills for *The Sussex County Magazine*.

CHARLES SKILTON, sadly died in 1990. He had served on the Wind & Watermill Section Committee since 1964. His main contribution to windmill literature was *British Windmills and Watermills*, published in 1947 by Collins, London. This appeared in their "Britain in Picture Series." Between 1941 and 1947 126 titles were published and most were subsequently reprinted. As a publisher he was prolific with books of

wonderful quality. These were: *The Windmills of Surrey and Inner London* by K.G. Farries and M.T. Mason, 1966, *The Mills of the Isle of Wight* by J. Kenneth Major, 1970, *The Windmills of Kent* by Jenny West, 1973, *Essex Windmills, Millers and Millwrights* five volumes, by K.G. Farries, 1981-1988, *East Yorkshire Windmills* by Roy Gregory, 1985, and *Watermills of the London Countryside* two volumes, by Kenneth C. Reid, 1987 & 1988.

ALFRED W. TIFFIN, formerly of Staplehurst, Kent, visited all of the windmills in Kent from 1924-33 and had intended compiling his own book, when a miller friend told him that William Coles Finch of Chatham, Kent, was engaged in similar work. The resulting book by Coles Finch, *Watermills and Windmills*, 1933, was revised and proofed by Mr. Tiffin and he supplied 129 out of the 322 illustrations. Writing in 1934 in *The Sussex County Magazine*, he announced it was his intention to compile and publish a complete survey of Sussex Windmills at this time, as Coles Finch was unable to take on the task.

REX WAILES, 1901-1986. The son and grandson of engineers, he served an apprenticeship in Lincoln, during which time his interest in windmills started. He later joined his father in the family engineering business George Wailes & Co. at Euston Road, London, which he continued to run until its closure in 1960.

He had a long association with the Society for the Protection of Ancient Buildings from 1929, and from 1962 as a consultant to the Industrial Monuments Survey for the Ministry of Public Buildings and Works. He wrote many papers for the Newcomen Society which he joined in 1925. His four books were *Windmills in England*, published in 1948 by the Architectural Press, and subsequently reprinted in 1975 by C.P. Skilton; *The English Windmill*, 1954, Routledge and Kegan Paul, and perhaps the standard work on the subject; *A Source Book of Windmills and Watermills*, 1979, Ward Lock and *A Source Book of Industrial Archaeology*, Ward Lock.

KARL WOOD, 1888-1958. Born in Nottingham he settled in Gainsborough, Lincolnshire, where he was art master at Gainsborough Grammar School. He had his own art studio and undertook private tuition in several subjects including painting, piano and singing lessons. Painting tuition resulted in sketching bicycle tours into Lincolnshire with his pupils. His first windmill painting was completed in 1926 and by 1956 he had completed 1394 windmill paintings!

It was Karl Wood's intention to publish a book on British Windmills to be called "The Twilight of the Mills", based on his extensive travels by bicycle. Sadly this did not transpire, however his *Lincolnshire Windmills* in four parts appeared in *The Lincolnshire Magazine* in 1936 & 37. Fortunately the definitive and first complete published account of the county can be found in Peter Dolman's *Lincolnshire Windmills* published by Lincolnshire County Council, 1986.

The paintings are now housed in the Usher Art Gallery, Lincoln.

There were two prolific Sussex authors who wrote entertaining armchair travelogues:-

STUART P. B. MAIS, 1885-1975, wrote many works on Sussex, but his main contribution to windmill literature was *England of the Windmills*, published by J.M. Dent in 1931 and later reprinted by EP Publishing. This was a random survey of mills principally covering those of the South East and East Anglia, as well as briefly touching other areas.

ROBERT THURSTON HOPKINS died in 1958. His many volumes on Sussex topography included four contributions on windmills: *Old English Mills and Inns* published by Cecil Palmer in 1927, *Old Watermills and Windmills*, 1930, Philip Allan, *In Search of English Windmills*, 1931, Cecil Palmer, which contained six chapters from his pen though the bulk of the work was written by Stanley Freese, and finally *Windmills* a small booklet published in 1931 by Charles Clarke of Haywards Heath, Sussex.

The editior wishes to thank Ron Martin for the cover illustration and valuable assistance with photographs and drawings for this issue.

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