Memories of Aylesford Paper Mills 1974 -81

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1 Introduction

I had worked on the Aylesford site at Reed Group Engineering & Development so was involved with some parts of the Aylesford Mill operation but in 1974 I was recruited to the Technical Department of the paper mill; initially to work on deink expansion but later with much wider responsibilities.

At that time, there were nine paper machines:

East Mill:

Nos 2 & 3 - 10 tn/Hr Fourdriniers making liner and fluting

No 6 - 24 tn/Hr Inverform making liner

No 8 - 1 tn/Hr Yankee machine making hard tissue

West Mill

No 9 - 12 tn/Hr fourdrinier open draw making newsprint

Nos 10,11, & 12 Yankees making wrapping and envelope

No 13 16 tn/Hr Fourdrinier pick-up making newsprint

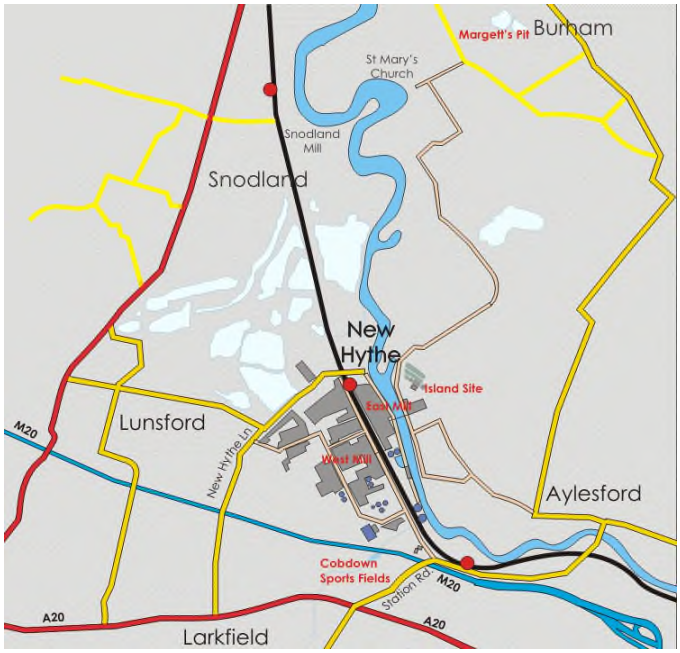

Figure 1 Area Map

The Mills employed around 2000 people although attempts to match exact numbers of personnel records with the payroll were difficult. In the period there were two major redundancy exercises due to paper industry contraction. In 1978 cuts were made and the Production Dept. split into East and West Mills. In 1980 the papermaking operations were vastly cut with the loss of 900 people. East Mill was then two machines, 2 and 6 and West Mill just No. 13 making 100% deinked stock newsprint.

2 The Site

Aylesford Paper Mill was the largest unit on a very large site. It reached out to Margetts Pit near Burham on the East side of the river to Reed R&D close to Aylesford Station.

The Reed Group had an acquisitive approach to business. The group loose-leaf telephone directory seemed to gain pages every month. Interests on the Aylesford site included paper, coating, corrugated boxes, paper sacks, plastic mouldings, drainage pipes and others.

A major presence was the Kimberly Clark three machine tissue mill, that had been a joint operation when KC first started in the UK in 1950[1] but became wholly owned by the US company.

The paper mill supplied services to the other companies - power, steam, water supply and treatment, building services, canteen services, the medical centre, fire service and a lot more.

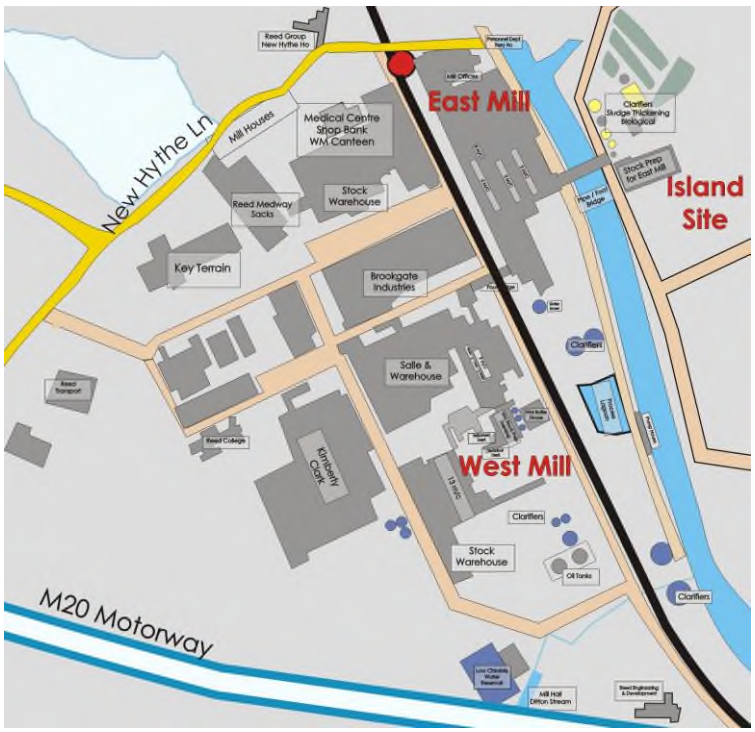

Figure 2 Site Map

On the edge of the site, in New Hythe village, were the Reed International offices in New Hythe House; the fire station, The Bull Pub, a shop and the illegal betting office. In West Mill was the bank and the site shop.

A major asset was the Reed Sports & Social Club at Cobdown. Cut off from the main part of the site in 1971 when this section of the M20 was built, it provided sports fields, including cricket where Kent Seconds occasionally played, bowls and a really good pavilion. In 1948 the fields were used by the Finnish Olympic teams for training – in thanks they gave a sauna which was still in use many years later.

3 Case Making Grades

In 1970 there were three machines in East Mill making liner and corrugated base papers, and the anomalous No. 8 making Hard Tissue.

3.1 Stock Preparation

OCC fibre was pulped in large Black-Clawson vertical pulpers situated on the Island Site, across the River Medway. Cleaned stock was pumped over a pipe/foot bridge and backwater from the three machines combined and returned. This mostly worked OK but, given the distance and the basic instrumentation, serious problems of water misbalance could occur allowing massive water and fibre losses.

In the East Mill there was still the redundant stock-prep. floor with ancient beaters and potchers left over from the shutting of 5 machines in 1971.

3.2 Nos. 2 & 3 Machines

These were old fourdriniers, fairly narrow, making liner and fluting. In 1976 No 2 was rebuilt upgrading most of the system, improving deckle, quality and energy efficiency.

This was the machine that Reed used to develop the E-flute grade; an interesting project as we struggled to improve the z-direction strength of the fluting to gain concora using changes to paper-making, refining and wheat starch, see 13 below

3.3 No. 6 Machine

Originally built in 1935 to make newsprint, No. 6 was later adapted to make sack kraft and in further adapted for Test Liner in 1967 by the fitting of one of the few Inverform dual wire machines, a forerunner of modern twin wires[2]. It made around 26 tn/hr of mainly liner.

Until 1979 the top wire was phosphor bronze and was seamed in situ. A team of women from the manufacturers came in during a shut and painstakingly soldered each warp wire across the 5m width of the machine. I believe it took 3 days. The whole concept was a large undertaking given the fragility of the metal wires and the lost time. The transition from bronze wires to synthetic did take a long time at Aylesford so the Wire-gang reigned – more below 9.3.

4 M.G Machines

4.1 Nos. 10, 11 & 12 Machines

The three West Mill M.G.s 10, 11 & 12 M/Cs were started in 1948, 1952 and 1956 respectively. Grades made were wrapping papers and envelopes – lots of qualities and colours; mainly virgin fibre but, by the 1970s, with varying proportions of deinked stock.

Pulp for West Mill was loaded onto the conveyors by the Yard see 9.1 below.

Each machine had a pulper, but to give flexibility they were all interlinked as were the stock and back-water systems. Virtually every grade had specific colour and sizing specifications, requiring close co-operation between the Q.C. and Production Depts.

One very difficult grade we made was Agricultural Green. Heavily dyed and containing copper 8-hydroxyquinoline sulphate as the fungicide. The copper salt was hard to retain and very expensive. As I remember it the cost of chemical additives was greatly in excess of the other materials, so measurements of retained levels was continuous.

Around 1979 the use of wheat starch was practiced on No. 11 M/C. The slurry from the Staper plant (see (13 below) was pumped from to West Mill and further diluted. After filtering it was sprayed on the wire around the suction boxes. On many grades, mainly cheaper envelope grades the deinked fibre content was increased enough to pay for the equipment and the extra shift operator. Eventually though, dusting issues around envelope manufacture stopped the spraying, staving the colony of cockroaches that had moved in under the machine.

The West Mill M.G. machines shut in 1980.

4.2 No. 8 Machine

Situated in the corner of No. 6 machine room, No. 8 made of hard tissue. This was an un-crêped grade used for institutional toilet paper (think Izal or Bronco) but also for uses such as flower wrap and interleaving paper. In 1951; prior to KC having its own mill, the machine had been used in a Kimberly-Clark/Reed partnership to make cellulose wadding. This continued until at least 1958 when K-C installed their first machine.[3]

The system was small: pulper, refiner, cleaners and quickly on the machine. Cylinder adhesion control was by soft soap, added, I think, to the stock rather than sprayed. Output was 80-100 tn /week. Shut 1980.

5 Newsprint Manufacture

In 1975 Aylesford was the first mill in Europe to produce 100% deinked newsprint to standard specifications as part of trials for plant expansion.

5.1 Deinking

The first deinking plant was installed in 1969, based on washing, using vertical Celleco screens. The typical 70:30 News: PAMs furnish was pulped in a conventional Black-Clawson pulper with a ragger to remove string and wires. Heavy cleaners and two stages of fine cleaners were used before dilution to <1%. The Celleco Fractionators consisted of two banks of 4 fine nylon screens each with 4 nozzles firing the stock onto it.

Figure 3 Celleco Fractionator

The stock was then thickened to 12% on Decker drum thickeners and stored before being sent to the two machines, No. 9 and No. 13. The proportion in the furnish at that time was about 20% so brightness was not so much of an issue. This plant was considered really good value – it was designed for 80 tn/day but by 1971 it was producing 120 with little upgrading.

In 1970 the decision was made to raise the proportion of deink stock. Reed Engineering were commissioned to develop a new design. First, a pilot plant was built in West Mill to try out new layouts primarily based on decker washing; and special work was done on the flotation plant at Imperial Mill in Gravesend. It was during a bleaching trial that a fatal fire occurred involving sodium peroxide and CMC. Jim Barham, who was on short term secondment to Reed E&D, was killed.

Based on trial results, the first phase of the deink upgrade was to add oxidative and reductive bleaching to the old plant. When this was complete, test runs of 100% deinked stock newsprint were possible by accumulating stock. These were successful, with some paper qualities improved and large cost reductions.

After much discussion, a hybrid design was adopted with Voith flotation and twin wire and decker washing. The plant cost was £4.5 million in 1978[4]. The reductive bleaching stage was quickly found to be unnecessary as very large brightness lift was achieved in the peroxide bleach with only a small blue dye addition to correct the colour.

Both 9 & 13 machines used the stock in newsprint and a fair quantity was added to the MG machines to improve costs.

5.2 No 9 m/c - Newsprint

Built in 1938, No 9 m/c had a deckle of 6500 mm. It was virtually unchanged from start-up; with open wooden headbox, that had its walls raised to achieved higher speeds. The wooden headbox walls were far from smooth, which was a real challenge for slime control.

The wire-table was unusual, being inclined at about 5° upwards and fitted with shake although at the "high" machine speeds it was not likely to be doing much. Drainage elements were table rolls, converted around 1975 to foils.

The open-draw at the couch was also a real challenge. The moisture profile was hard to control. The chemical content of the furnish was often increased to impart more wet-web-strength; although, at that time it was probably not called that in the machine house.

It had conventional three presses and a long drying section.

The drive section was also ancient. DC motors, speed controlled through a separate shaft. One major project we worked on was to determine the cause of an intermittent draw fluctuation. Instrumentation was non-existent on the machine (well maybe volt meters without recording) so we had to measure and record everything for ourselves. Black and silver tape was fitted to all the couplings and optical sensors determined the surface speeds; the signals passed to pen recorders. Everything done around open high voltage bus-bars and moving shafts. After a break, the trace was inspected and hopefully the originating disturbance discovered. Lots of breaks later the culprit resistance was found.

One of the selling points of Aylesford's newsprint at the time was its smoothness, achieved using supercalendering. Great for smoothness, not good for surface strength. This was big disadvantage with the tacky inks used in letterpress. Complaints from the Daily Mirror, where a deep black print required a lot of tacky ink, were especially common; even though they were in the Reed Group. In 1976, under the threat of losing the business, starch was added at the wet end to improve the z-direction strength and dusting. The starch used was "Staper Starch" see Section 8.2 below, a wheat starch slurry generated on site.

This had a major impact on biological control. When introduced there was a massive outbreak of pink-slime. I remember leaving the mill late one night having done a through wet-end clean-up and returning eight hours later to find the machine shut again with a 4 mm thick layer of the pink stuff right through the newly cleaned flow-box approach.

No. 9 machine shut in 1980.

5.3 No. 13 m/c - Newsprint

Commissioned in 1957, when it was state of the art for newsprint. Initially the furnish was 20% Bleached Kraft 80% Mechanical, but by 1960s it a proportion of deinked fibre was used that was gradually increased to 100%.

The 1957 machine advance was the suction pick-up; massively improving runnability, although the policy was always to push the speed to just beyond good runnability and then perhaps, grudgingly, ease back. In fact, papermaking was still more art than science. Heated arguments with the Machine Superintendent, Wally Dumbrell, were a feature of the technical specialist's life. New concepts were met with "we tried that in 19…" or "that may apply elsewhere but this machine is different". Of course, the truth was somewhere in between and, however heated the arguments, relationships were back to mutual respect very quickly. Progress was made slowly; notably Reed R&D with the Mill Instruments Dept. introduced computer control of substance and moisture and even fourdrinier wires were slowly changed from phosphor-bronze to synthetic.

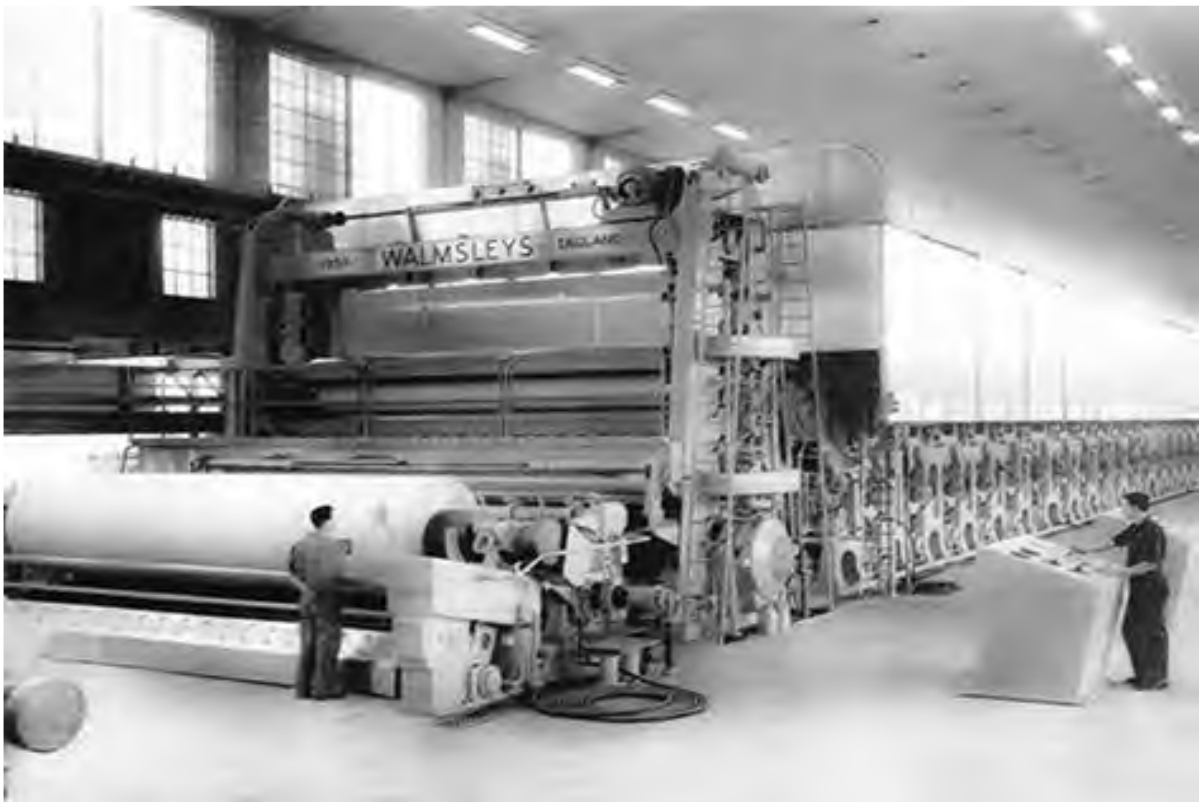

Figure 4 No 13 Machine about 1965

6 Power Supply

Electricity was generated on site by massive oil fired, high pressure boilers and turbines. The boiler house stood about 120 metres high adjacent to the railway in West Mill. Standing on the top grid top floor looking down through six or seven floors was a surreal experience.

Heavy Oil was brought in by train and unloaded into two very large storage tanks. From there it was pumped around a ring main with a take-off to the "day tank" in the boiler house. All pipes and pumps were lagged and heat traced to keep the crude oil viscosity down.

This system once caused an oil pollution incident. The day tank level control signalled the tank was full, but the valve failed to shut. The pneumatic valve had water in the actuator which had frozen. The next high-level system also

failed and the alarms that were supposed to alert the boiler house staff were ignored. The tank overflowed into the bund which leaked into the drains system. The next link in the unfortunate chain was that specific drain was open to river, which was permitted in some circumstances, and the oil entered the river affecting some swans downstream. The chain of events, each controllable, lead to an appearance at Chatham Magistrates Court and a large fine.

The high-pressure steam was first used for the actual power generation using several condensing turbines. Steam was then distributed around the site for paper drying and heating uses. On a site of that size there were always leaking traps helping create the misty mill micro-climate on still winter days.

7 Water and Effluent.

The Technical Dept. headed by Roger Barnes, was responsible for water supply and effluent treatment up until the major redundancy exercise in 1980. As with many mills it considered "a necessary evil" so spending was low, meaning the effluent plant was always running to keep-up. Leadership of the day-to-day operation was given to a Senior Process Chemist as a step -up promotion but they did not tend to have much experience, certainly not in effluent, so relied heavily on Bernard Atkinson, the Supervisor; Colin, his deputy with the 40 shift and day staff.

7.1 Water Supplies

The mill site had four water sources, river water, boreholes, stream water and mains water, each treated in different ways.

7.1.1.1 River / Process Water

The River Medway was the largest water source. The water was taken from the West Mill side of the river. It was first screened. For the condensing turbines, this was the only treatment and it was passed through the turbines and returned to the river, slightly warmed, or used in the process water system.

Water for most paper making was pumped and held in the "Ballast Pit" to settle out larger particles. This large pit, which gave over 3 hours dwell time, was where gravel had been taken when the mill was built. Of course, the removal of river silt from the pit was a major operation, usually planned for Summer Shut week using drag-line diggers.

After settling the water was chlorinated. This was potentially the riskiest plant on site. Liquid chlorine was brought in by 10 tn rail cars until 1979 when British Rail decided that those were to be stopped, changing the minimum to 32 tn net. The rail track had to be upgraded as was the emergency plan. In case of a major leak the plan would have demanded the possible evacuation of thousands of people, so chlorine was replaced first by an organic biocide and then in about 1983 by bromination.

Table 1 Aylesford Typical Water & Effluent Flows 1981

Location	Typical Conc. mg/L	Flow L/s	Flow m^3/day	10^6 UKgals /day
Cooling Water	<75	700	60480	13.3
Water to Processes				
Low Chloride Water	<5	150	12960	2.9
Process Water	<25	417	36000	7.9
Treated Water				
Deinking Loop	3000-4000	167	14400	3.2
Primary Effluents				
West Mill (MG Machines)	1000	33	2880	0.6
East Mill (West Mill, East Mill, Site Co)	1000-2000	383	33120	7.3
Island Site (High conc liq, sludge filt.)	1000-3000	100	8640	1.9
Effluent Discharge				
Treated Process Water	<150	500	43200	9.5

The river water, now called Process Water, fulfilled most functions in paper-making on most of the machines. There was the ability to recycle clarified effluent into the Process Water system. An extended trial of this was run, bringing the use of fresh river water down by 80%, about 3 m^3/tn, but at the time the process and environmental benefits did not give sufficient incentive, so the system was opened up again.

The site fire hydrants were supplied from a separate main, usually Process Water but during a fire diesel, high pressure pumps would cut in automatically drawing screened river water. These required safety cover during the mill Christmas Shut meaning that a few operators were paid very special rates for these days.

7.1.2 Low-chloride Water

The Medway at Aylesford is tidal so when fresh water flows are low there is significant sea-water which made the process water saline. Fortunately, there were cleaner sources of water. The local stream was taken at Mill Hall (site of a 19th century mill) and ground water from 9 or 10 boreholes were used; being collected in an underground reservoir. This was the Low Chloride system. The water was used firstly for the Kimberly Clark and West Mill Yankee machines to reduce cylinder corrosion and, on the latter, improved sizing; then for showering on other machines.

The stream was just screened, which was not much help when a lorry load of eggs was dumped in up-stream. These should have been used in the Goldwell factory in East Malling to make the then fashionable Snowball drink.

7.1.3 Town's Water

All domestic water, boiler feed and the Staper Plant were fed from the local water company supply.

There were a good number of meters on all the mains to try to keep usage under control and, of course charge the subsidiary site companies. Mostly, there was plenty of water for all functions, the problems came with the solids yield and treatment of the volume.

7.2 Effluent treatment.

The effluent system had grown to be one of the largest, most complex arrangements around. With the majority of fibrous raw materials being recycled fibre a lot of material was lost from the machines with the water which then had to be cleaned.

There were seventeen clarifiers treating different water streams, hundreds of sludge pumps of different designs, four biological plants, sludge thickeners and a large sludge disposal operation.

7.2.1 East Mill Effluent

In East Mill there were four settlement clarifiers; two of one million gallons, and two 10% bigger. These were old, the first for the mill; but they probably did not date quite as far back as the 1920s. when water would have been discharged straight back to the river.

7.2.2 West Mill Effluent.

The systems here were more specialized. Three small settlement clarifiers were designed to take water from 10, 11 & 12 M/Cs but, as they were usually making colours in fairly short runs, the original aims were not met and they were low on the maintenance priority list and not often running.

Two large Krofta Sedifloat clarifiers were in the water loop of the Deinking Plant. It was here that chemicals were used. Water was virtually all used back in the plant.

7.2.3 Island Site Effluent.

When the mill was built a large loop of the River Medway was shortened by the construction of the Middle Cut, leaving the Island Site. This was unused until 1966 when recycled fibre preparation, biological

Figure 5 Effluent Plant - Island Site

treatment and sludge handling was installed there.

By 1975 there were four activated sludge plants: two circular tanks with separate clarifiers, the oldest; a Krofta unit which combined the main tank and separation in one tank and, the most reliable, a conventional large rectangular, concrete tank unit with a separate sedimentation clarifier.

Sludge treatment was always an issue and a bottleneck. The mill output was around 5000 tn/week at a yield of 80% so the effluent plant dealt with about 1000 BDtn/week of solids.

A very complex pipework system, using very many Mono Pumps, moved the clarifier sludges, around eventually reaching the sludge thickening. This was done on five Paxman Rotary Vacuum Filters with string discharge which dropped the cake on to a conveyor to a "Jet Thrower". This was an agricultural device with two fast moving belts that launched the sludge 10 metres up on to a pile.

During the day, the pile was shovelled into lorries and moved a couple of miles to Margett's Pit an old chalk quarry owned by the mill.

The whole sludge processing was fragile – lots of potential for break-down especially Mono Pumps running dry and the jet thrower belts running off.

Figure 6 Paxman RVF

8 The Technical Department

Until the major redundancy exercise in 1978, the Technical Dept. headed by Roger Barnes, was responsible for QC, water supply and effluent treatment, the laboratory for testing pulp and water, product development and many aspects of more scientific papermaking run by the band of Process Chemists.

8.1 Process Chemists

Under the Mill Chemist teams of Process Specialists looked after many technical aspects of paper-making, hopefully, more the science than the art / black-art parts.

First responsibility was the day to day control of most of the chemicals. For the liner grades and the MG machines acid sizing was the norm; using vast quantities of alum and size. Initially, the size was emulsified on-site, the process chemists having the problems of the sensitive plant.

The chemistry of sizing did evolve. It seemed that usually the incumbent supplier (chosen by the group purchasing) was challenged by a successful trial by the main competitor. This generated the response "we were going to do that" from the incumbent; who kept the business. Frustrating for the

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These are vacancies both for newly qualified graduates and for men with some years industrial experience. Applications stating age, salary and full details of experience should be sent to: The Personnel Officer, Group Personnel Division, MESSRS. ALBERT E. REED & CO. LTD., Aylesford Paper Mills, Larkfield, Nr. Maidstone, Kent, quoting ref: EPCE/66.

New Scientist 5 Sep 1957 p46
via Google Books

Figure 7 Process Chemist Job Advert

Technical Department. Eventually this monopoly was broken, sizing was split 60:40 with the central size plant being switched on a regular basis.

Many chemicals were in the complete control of Technical staff. Biocides were an obvious group. Most were much more toxic than current materials and required careful handling of the 200 litre drums to multiple points around the mill.

Alum was delivered by tanker, once or twice per day. A ring main carried it around the two mills. One occasion when a leak occurred the delivery rate jumped to five tankers a day for two days before it was noticed; of course, the alum company didn't own-up.

The role of Process Chemist was an excellent training ground, many people (mainly young men) moved to other roles within Reeds or on to suppliers; meaning that each year the Mill would take on 6-8 graduates or equivalent to keep the operation going.

8.2 Quality Control

Under Barry Tucker and, the most aptly named, Ken Tester, paper was well tested by a team Shift Testers situated in each mill. They would take a good range of samples from each reel and subject them to a wide range of tests; prepared to defend their results to the production operators.

Figure 8 Cobb Testing
Scene from Mill by the Medway[5]

Manual substance measurement was still important on most machines as beta gauges, rightly or wrongly, were not yet sufficiently trusted. Of course, the critical tests varied by machine and grade; plybond on 6, Cobb on the liner grades and MGs, tensile strength on 9, smoothness and luminance on 13, and burst on many grades.[5]

Unusually for that time, each point was recorded graphically on large charts showing action and reject values, many years ahead of six-sigma but definitely a forerunner to it.

Ken & Barry looked after the shifts, the instruments, the air-conditioned rooms, customer complaints and the pneumatic tube system that moved paper samples between testing offices. One of their most critical duties was the setting of QC targets to match machine capabilities to the needs of the customers.

Figure 9 Zeiss Elrepho

The measurement of colour as a major issue. The instrument was the Elrepho. For each wavelength, the procedure involved several readings and each with a calibration against the MgO standard. A full

L,a,b on one sample took around 10 minutes meaning that the evaluation of a trial was a tedious, many day task.

8.3 Mill Laboratory

The laboratory, under Alan Thomas, was charged with a vast range of testing, mainly of Effluent samples from around the site, but also certain chemicals and the boiler waters. These results were also plotted daily and weekly to keep pressure on suppliers and as a defence when the River Authority sample was out of spec.

9 *Yard Department*

Under Harry Howard, this Department was responsible for fibrous material movement; sludge movement to Margett's Pit (until 1978); and the heavy lifting involved in wire and felt changing.

9.1 Pulp movements

When the mill was built in 1927 the River Medway was the route in for virtually all fibrous raw materials. Pulp was imported from mills in Canada (some eventually part of the Reed Group) via the Port of Rochester and transferred to barges for the 20 miles up the River Medway.

Barges were unloaded using overhead cranes that reached over the quayside. The wires of bales, each of about ½ ton, were hooked to chains and lifted on to stacks. Of course, wires broke regularly so one never walked or even drove under the load.

By 1960s most fibre was recycled and most of the pulp used was consumed in West Mill so the better route for pulp from Rochester was by road as this avoided the stacking in East Mill and transfer by lorry to the West Mill stacks. The river was still used but with a very low frequency.

Transfer from the pulp stacks to pulper conveyors involved another labour-intensive crane lift on to the pulp floor and another team of men with sack barrows to transfer the correct mix onto the belt.

Piece work payment systems and other factors meant that pulp stock taking was extremely inaccurate. Much more pulp was delivered to the pulpers than ever appeared in the products. Many Management Service graduates failed to balance the books, but it was better after the police were called in to investigate fraud in 1978.

9.2 Waste-paper

Old corrugated containers (OCC) and other brown grades were delivered to the Island Site by Maybank, another Reed Company. This was mainly in bales and stacked in several areas before use, some for many months.

In West Mill the furnish for deinking was mainly News & Pams in both bales and loose. Much of the loose was over-issue from printers. For several years the morning delivery was a scramble for favourite magazines until a fatality added sufficient weight to the safety message.

The pulping of security waste was a pantomime. Often a group of supervisors were at the bottom of the conveyor supervising the loading while, out of sight at the top, the coupons or whatever were being hooked off.

9.3 The Yard Gang

In the days of phosphor-bronze wires a machine might need the mesh to be changed routinely every 7-10 days and fairly frequently in between if there was an accident such as an item dropped on the wire.

The weight and fragility of the wire required a specialist gang to supplement the machine crew. These heavy weights were part of the Yard, recruited for strength and paid well for call-outs and unsocial hours.

As synthetic wire replaced metal their work reduced dramatically but they were still used in clothing changes.

Figure 10 Salle 1954
Still from Mill by the Medway

10 Salle and Dispatch

A good proportion of the MG machines output was sold as sheets. Under Leslie Ames, cutters generated the sheets and the women of the Salle checked, counted and packed the output. The Salle was a place of torment for some young men who had to run the gauntlet of cat-calls and lewd remarks if their duties took them there.

Much of the product from the mill was dispatched via Reed Transport Ltd.

11 Engineering

11.1 Mechanical

Maintaining all the mill machinery and site infrastructure require a vast number of skills. Contract labour was not used very much and with nine machines there were always planned shuts to keep a large work-force busy.

The depth of resources was illustrated one Christmas. We returned after Boxing Day to find the whole mill frozen-up, with many frozen pipes and split pump casings. Over 3 days, more than 100 pumps were removed, welded and reinstalled as well as the repair of pipes. While the normal shut jobs suffered the mill re-started on time.

11.2 Electrical

As with all mills, good operating time was critical. At a time when predictive maintenance was in it's infancy each mill had a Shift Electrician with a couple of mates to look after equipment from many eras; for example, some of the drive motors dated back to the 1930s, running on DC power with large open bus-bars, shunt resistances and mechanical speed controls.

11.3 Instrument

Under the fiery Fred Church, Chief Instrument Engineer were several specialists who were very competent. Instruments were evolving from very simple measurements and loops, such as levels, measured by DP cells, going to a single function controller, to the start of real function control such as dry-end beta gauges controlling substance.

Not surprisingly, the mill had hundreds of circular chart recorders which had to be changed each day and then stored for a couple of weeks for reference. This store was often the first visit if something had "gone wrong in the night".

Fred's real mission was to get all the machines thick-stock "constant level" headboxes replaced by pressure control. As with many things that impinged on the "Art of the Papermaker" he was a prophet in the wilderness. Of course, on the surviving machines, it eventually happened.

The least wanted duty in the Instrument Dept. was the maintenance of the Water Treatment Chlorine Plant referred in 7.1.1.1. Large quantities of chlorine were used containing trace bromine that clogged the dissolving system. The shutting down of the for cleaning this out was necessary at frequent intervals; a nasty, dangerous job.

12 Personnel

The Personnel Department was led by Eric Hunt, with a group of assistants. They were based in Ferry House close to the river in New Hythe village (with the then not legalised betting shop).

The Mill was highly unionised – with at least five unions represented. Papermakers mainly had The Society of Graphic and Allied Trades (SOGAT). with the "Father of the Chapel" for each mill. Also represented were the Transport and General Workers (T&GWU), Electrical Trades Union (ETU), Amalgamated Union of Engineering Workers (AUEW).

Negotiations were difficult, each union trying to gain advantage over the others, and trying to compare not-matching jobs to get better terms.

12.1 Safety

While safety in the 1970s was not at all like recent years, in Aylesford the attitude was ahead of its time. There was a serious Safety Officer, Eddie ? who was heavily involved in writing the first UK Paper Industry Safety Guide, probably in response to The 1974 Health & Safety Act. Even so there were regular accidents of all severities to keep the Site Medical Department busy.

Trapped limbs and falls were common; while hearing protection was virtually unknown, leading to shouted conversations. No 9 machine had a particularly loud couch-roll siren effect that has given many of us a gap in our hearing frequency.

One accident survivor, Ian ? was one of the luckiest. Unbelievably now, one of the "duties" of the No. 6 Machine man involved crossing the running machine within a felt loop on a narrow wooden platform. Ian slipped and fell into the felt bottom loop, which fortunately was old, weak and split, throwing

him on the basement floor with many injuries including a crushed pelvis. Ian, who had been "Father of the Chapel" for the SOGAT Union, returned to work in the Personnel Dept., a strong ambassador for safety.

13 Staper Ltd

Staper Ltd. was an unusual company. It was jointly owned by Reed and RHM (Rank Hovis MacDougall, the flour miller). RHM supplied flour and the starch was separated from the gluten; which was refined and dried and sold to Rank Hovis. Probably this was more valuable than the starch as gluten based slimming foods were in fashion. This was before gluten intolerance was so widely seen.

The plant was situated in East Mill and was run by John Baker.

Most the starch slurry was used in the size presses on No 6, 2 and 3 machines and to improve inter-ply strength on No 6 Machine. It was a cheap resource so at times it was used to improve surface strength in newsprint and, by starch spraying on the wire, to allow fibre substitution by filler on the M.G. machines. The wheat starch, containing as it does both small alpha and larger beta cells, generated interesting issues around cooking to get the best strength.

Some names from the era:

Chris Ames - Process Chemist	George Howard - Mill Manager
Les Ames - Salle and Dispatch Manager	Harry Howard - Yard Manager
Bernard Atkinson - Water Services Superintendent	Eric Hunt - Personnel Manager
John Baker - General Manager - Staper Ltd	Albert Martin - West Mill Stock Preparation Superintendent
Roger Barnes - Technical Manager	John Martin - West Mill Stock Preparation Shift Manager
Len Bevan - West Mill Machine Superintendent	Richard Martin - Process Chemist
Dave Brodie - Process Chemist	Martin Millar - Process Chemist
Fred Church - Instrument Engineering Manager	Peter Otway - Process Chemist
Gary Church - Instrument Engineer	Neil Perkins - Laboratory Assistant
Roy Cogger - West Mill Manager	Peter Preston - Senior Process Chemist
Tony Colwell - Process Chemist > Management Services	Reg Spice - West Mill Manager > East Mill Manager
Geoff Crane - Senior Process Chemist > DI Plant Superintendent	Rachel Stagg - Personnel Assistant
Griff Crouch - Process Chemist	Len Stevens - Services Engineering
Ron DeGray - Mill Manager	Jack Strickland - Laboratory Assistant
Walter Dumbrell - No 13 M/C Superintendent	Bernard Terry - Instrument Engineer
Roy Hallam - Deputy Technical Manager	Ken Tester - QC Superintendent
Dennis Hardman - Chief Process Chemist > East Mill Production	Alan Thomas - Laboratory Manager
David Higgins - Process Chemist	Barry Tucker - QC Manager
Eric Howard - Personnel	Peter West - Assistant Process Chemist

Job titles were as remembered for the period – many went on to senior positions later.

[1] The Times 5 July 1955 Supplement pii
[2] Paper Technology 1971
[3] History of Kimberly-Clark UK Syd Emerson 1968
http://www.baph.org.uk/forum/topic/kimberly-clark-aylesford-mill/#post-710
[4] Renaissance Published by Aylesford Newsprint 1999

[5] Mill on the Medway 1954 Orion Films - Paper Mill and other companies with commentary. Adapted version with more recent history in introduction - https://youtu.be/8dHWnJTfr6U