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The Great Northern Paper Company, Chapter 09: The Poor Relation

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C H A P T E R IX

THE POOR RELATION

Let us now go back to the story of the Madison mill. It was sold in 1955, but it made the first paper produced by the Great Northern Paper Company, and for fifty-six years was very much a part of life with Great Northern. Indeed, it at times assumed an importance all out of proportion to its size, and what was done at Madison influenced to a considerable degree the later developments at Millinocket.

It has always been said that the Great Northern Paper Company, when it acquired the Madison plant, simply went ahead with the addition of a groundwood mill, two newsprint machines and the necessary supporting facilities, as an integrated project, in order to get into production as soon as possible. Garret Schenck reported to the stockholders at the first Annual Meeting of the Great Northern Paper Company, held in Bangor on January 17, 1900:

"The Madison mill purchased of Col. Oliver H. Payne consisted of a sulphite fibre mill only, with a capacity of thirty to forty tons per day of finished product.

"It was decided by your Board of Directors to erect in connection with this fibre mill, a ground wood mill and a two machine paper mill. This has been done; and the property now consists of a ground wood pulp mill with a capacity of forty tons per day, built in the most substantial manner of granite, brick and iron. A sulphite mill that has been rebuilt -- an entire new wood preparing room and saw-mill -- and other changes, will insure a product of more than sixty tons per day. A paper mill consisting of a complete two

machine mill, with a daily capacity of fifty tons of newspaper -- constructed in the substantial manner that it is to the end that the repairs and shutdowns shall be reduced to a minimum."

According to the President's statement at this meeting, the work of converting the sulphite pulp mill of the Manufacturing Investment Company -- which incidentally has erroneously been called the "Manufacturer's Investment Company" in some historical accounts -- into the Great Northern Paper Company's first newsprint operation was started in April, 1899. It really began earlier than that, and we immediately run into some rather confusing situations.

In the first place, the engineering for the job was done not by Hardy Ferguson, but by the firm of O'Keefe & Orbison of Appleton, Wisconsin, engineers for the Manufacturing Investment Co. Hardy Ferguson was at Madison as early as February 2, 1899, and made frequent visits there during the course of the job, but Mr. Orbison, who was often at Millinocket for consultation, was in charge.

That the engineering was not done by Hardy Ferguson is perhaps not important, and might be explained by the sheer magnitude of the Millinocket project under way at the same time. However, Emma Folsom Clark, in her "History of Madison", has a diary entry: "1899, January 26th. First paper machine for Manufacturing Investment Co. arrived. It is 136" wide, 30 tons per day capacity of high grade manila fibre." There is no doubt that this machine, or part of it, was delivered at this time. The manufacturer's

record of the order has a footnote to the effect that the reel was "to be shipped April 1, 1899", and the reel would of course have been of no use without a machine ahead of it. There is also no question that this was one of the machines installed by the Great Northern Paper Company. The manufacturer's shipping records are gone, but their engineering files show that the Madison machines were the only ones of this size they had built up to that time.

The curious thing is that while the order, which was for two machines; and they were not designed for newsprint; was in the name of the Manufacturing Investment Company, it was not entered in the books of the manufacturer until February 14, 1899, the day the legislation making the name Great Northern official was approved by the Governor, and three days before the receiver took over the Madison mill. The name of the Manufacturing Investment Company was subsequently erased and the name of the Great Northern Paper Company entered in a different hand, but the date was not changed, and the manufacturer has no previous record of the order.

There is in existence a signed proposal and specification for these two machines, made by Rice, Barton & Fales Machine & Iron Company on January 20, 1899 to the Great Northern Paper Company, and accepted by "Garret Schenck, its President" in his handwriting. The date of the proposal is of course prior to the legal adoption of the name "Great Northern" on March 2d, and some of the equipment must already have been made. Date of delivery is specified to be as near May 15, 1899 as possible, for both machines. The page of the specification which contains the date

and terms of delivery says "the Manufacturing Investment Co. to furnish the necessary laboring help" for the installation of the machines". This one page is typed on paper different from the rest, perhaps indicating that it was taken from some other proposal.

We make no effort to explain these anomalies. On the face of it, it might appear that the Manufacturing Investment Company itself had plans to install paper machines, and that they were on order before the Great Northern Paper Company came into the picture. This does not explain the date of February 14, 1899, and the writer has never heard of anything that would indicate such plans. It seems more likely that the purchase was originated by Garret Schenck, some time late in 1898 under the Manufacturing Investment Company's name, as a matter of convenience. This, does not explain why they were not newsprint machines, unless the original intent was to make manila fibre, as was actually done later, with the groundwood mill and early production of newsprint the result of second thoughts. In any event, there was obviously a handshake deal between Rice Barton and somebody. This kind of transaction was not uncommon in those days.

It must be remembered that the Directors of the Great Northern Paper Company did not actually vote to buy the Madison mill until July 21st, and while the mill began to be identified with Great Northern in March, the Receiver's letter previously quoted indicates that it continued to operate as the Manufacturing Investment Company until some later date, with the cost of the new construction being charged to Great Northern. This would account for the name of the Manufacturing Investment Company appearing

in various contracts.

There is a draft of "Specifications for Rebuilding and Adding to the Madison Mill", date March 25, 1899. While this was after the name Great Northern Paper Company was official, the name of the company is left blank. The general contract for construction was let to Greenleaf & Doring, of Lewiston, on April 13th. (1) Greenleaf had previously done work for the Manufacturing Investment Company. From knowledge of what is known to have been done at that time, there is little doubt that it was essentially in accordance with this specification. Of incidental interest, wages for laborers on this job were \$1.35 per day, which was increased in May to \$1.50 per day; \$1.65 for night work and \$1.75 for night work if the men furnished their own boots! (2)

Involved in the conversion were the addition of a complete 40-ton groundwood mill and a hydro-electric plant; the installation of two paper machines; the construction of a finishing room to replace the old pulp storage building; a rebuild of the steam plant and a general revamp of the sulphite mill and stock system. There is enough information from which to piece together the more important details.

The masonry wall on the river side of the canal was rebuilt, the lower end of the canal being widened toward the river to make a forebay for the water wheels in the new grinder room and power plant. All the old water wheels were removed, and the wooden flumes were torn out and replaced with stone and iron construction. The grinder room and power plant were housed in a new brick structure, up-river of the wood room and adjoining its north wall. This building was on stone foundations, over brick arch tailrace flumes.

Eight two-foot, three pocket Holyoke grinders were installed in four lines of two grinders each, two pairs of James Leffel & Co. 35 inch Samson water wheels driving each line. A pair of the old 27 inch Hunt wheels, from the original installation, were re-installed to drive raw water and stock pumps in this room.

Between the new grinder room and the old wood room wheel house, three pairs of new 45 inch Samson wheels, with Lombard governors, were provided to drive a like number of General Electric 3-phase, 600 volt, 300 KW 40 cycle horizontal generators. A 30 KW D.C. exciter set, powered by a steam engine, served also as a standby lighting unit. One pair of the original 42" Hunt wheels was installed in a new flume adjacent to the wood room to drive the filtered water pump and groundwood screens through shafting and pulleys.

The wood room was reorganized and new saw rigs were provided. It is almost certain that chippers had been installed before this time. Another pair of the old 42" Hunt wheels was set in a rebuilt flume under the wood room to furnish power for the wood-preparing equipment. This wood room wheel house also contained a pair of 21" Hunt wheels from the original installation, connected to a fire pump. Tailrace flumes for the wood room wheels passed under the new groundwood screen room. All the wheels were operating under a head of about 16 feet. An entirely new fire protection system was provided for the mill. A brick extension was built west of the digester house and wood room to house a filter plant, equipped with New York sand filters, similar to those at Millinocket, and to provide space for groundwood screens and thickeners.

The traveling crane structure for piling logs was torn down,

and it appears that a wooden cribwork may have been built at this time, with fill to make more yard space. All the clutter of wooden construction around the intake to the wood room was done away with.

A new brick acid plant building, with lime and sulphur storage compartments, was built in the mill yard east of the digester house. Eleven sulphur burners from the old installation were moved into this building. The old wooden acid towers east of the Somerset Railway and the long lines of piping which ran from them to the sulphite mill were removed. The Hilton House was later built on the site of these towers. The wooden tank house on the river side of the digester building was demolished. It is presumed that the original conveyor running under the digesters had been removed before this. If not, it was taken out at this time and it is probable that when the mill started up again the pulp was washed out of the digesters into a common spout and run to a tank somewhere, as there were no blowpits.

The boiler house was enlarged, and it would appear that four new Babcock & Wilcox 135 p.s.i. hand fired boilers were installed. Greene Fuel Economizers were added. The old coal pocket and trestle were maintained. A conveyor was built to replace the pneumatic system for carrying wood room waste to the boiler house. The old office building and carpenter shop in the yard on the west side of the mill were torn down, and a new brick building, for use as a repair shop, was built between the steam plant and the sulphite mill.

All of the old pulp screening equipment, whatever it may have been at that time, was removed, and was replaced by fifteen

Decker flat screens. Four groundwood thickeners were also provided. Three 1,500-lb. Jones beaters and one jordan, with the necessary tanks, pumps and piping, were installed for each of the two paper machines, the beater equipment being placed on the second floor of the old washhouse building.

As previously pointed out, this was the first paper mill ever to have a full-scale electrical power generating and distribution system. The 550-volt motors were of the same type as those at Millinocket, and drove the equipment through ropes and sheaves or belting and pulleys as follows:

Acid Plant	1 - 100 h.p.	Driving a vacuum pump, agitators, lime pump and acid pump.
Screen Room	1 - 200 h.p.	Driving the screens and two sulphite jordans.
Wet Machine Room	1 - 75 h.p. 1 - 50 h.p.	Driving deckers and wet presses.
Beater Room	2 - 150 h.p.	Each driving three beaters, one jordan, and the accompanying pumps and tank agitators.
Beater Room Basement	2 - 100 h.p.	Driving stock pumps, white water pumps and boiler feed pump.
Machine Room	1 - 30 h.p.	Driving roof exhaust fan.
Repair Shop	1 - 15 h.p. 1 - 5 h.p.	Driving machine and woodworking tools.
Boiler House	1 - 5 h.p.	For economizer tube cleaners.

The mill was lighted by 40 arc lamps and 500 incandescent bulbs, taking 120-volt A.C. current through transformers.

The wet machines and hydraulic presses were removed from the machine room and were installed in what became the screen room on the top floor of the old washhouse. The large wooden pulp storage building and loading shed at the south end of the machine room

was torn down and replaced by a one story and basement brick and steel finishing room with the main floor at the level of the machine room floor. An office was partitioned off at the down-river end of this room. A new roll grinder was also located in this structure. There is information to the effect that at this time a loading track ran into the finishing room basement, the finished paper being rolled down a ramp from the main floor for loading. This may be confused with the old pulp ramp. If it was ever there, this arrangement was replaced within a few years by an open loading platform along the east side of the finishing room.

There was a considerable amount of excavation in the machine room basement. The row of columns down the middle of the room was removed. The brick piers which supported the original pulp-drying equipment were rebuilt to take the wider tracks required for the new paper machines. The specification called for these piers to be remodelled if possible, but part of this work still remaining indicates complete rebuilding. In later years, one of these foundations was to give the mill some headaches.

The first indication that the original intention was not to make newsprint is the number of beaters for each machine, but other points will be noted. The two Rice Barton & Fales machines were duplicates, and were much the same as those installed at Millinocket, although there were some small differences. The width is variously given as 132". 134", and 136"; Rice Barton records say 134", but the construction at that time allowed certain leeway in wire width. The Decker flat screens were followed by an overflow box and a straight front slice 8" high. The wire was 60 ft. long; the gun-metal breast roll 16" diameter. The shaking table

roll section had 4" diameter brass table rolls and rubber deckle straps running on pulleys. Savealls 5" deep and probably made of wood, in sections, extended under the entire wire. The wire return rolls were of brass, 7-3/4" diameter. There were five suction boxes with maple tops, and some means of oscillating these was provided. Couch rolls were both cast iron, covered with gun metal, the bottom roll 22" and the top roll 20" diameter. There were two presses, both with 22" rubber covered bottom rolls. The first press had a 24" gumwood top roll and the second press a 22" gun metal top roll, both fitted with wooden doctors and mechanical weight rigs. Felts were 36 ft. long, both provided with whippers, and the first felt had a shower and suction box on it. Felt rolls were all of wood, 8" diameter.

There were 30 cast iron dryers, 48" diameter, in two sections, and a receiving dryer of smaller diameter on each machine. Dryer felts were arranged with hand and automatic guides and stretchers. Each dryer was fitted with an internal metal scoop, rather than the later syphon, for the removal of condensate, and all bottom dryers were doctored. Felt rolls were of steel, 7" and 8" diameter. There were no anti-friction bearings on these machines.

The original specifications called for both of these machines to have three calender stacks, another indication that they were intended for the making of paper other than newsprint. However, only one stack, with a 24" bottom roll, 16" intermediate and seven 12" top rolls was actually installed on each machine. The reels were of the two-spool upright type. No broke beaters were provided, dry broke being taken back to the beater room in

carts, up a ramp, as the machine room floor was a little lower than that of the beater room. The rewinder was in two sections, a slitter part and a Farnsworth single drum winder with slip-belt drive, like those at Millinocket.

The drives also were similar to those on the Millinocket machines, through cone pulleys and mitre gears with wooden teeth. The basement line shafts were driven by reciprocating steam engines furnished by Carman-Thompson Company. Speed pulleys with clamp hubs for quick changing provided a range of from 50 to 400 feet per minute, again not a newsprint requirement. These machines were bought for \$39,750 each, delivered at Madison. This is less than the price paid for the Millinocket units, probably relecting modifications in the latter. They were capable initially of producing about 25 tons of newsprint each per twenty-four hours.

All of the above work was accomplished between February and the first of November, 1899. The probable date of the shipment of the first newsprint was November 15th. The company's first financial statement was for the period starting on that date and ending June 30, 1900. This statement indicates that the actual cost of construction and equipment was approximately \$660,000, which with the purchase price of the old mill and water power and a little timberland, would have made the total cost just over \$1,100,000.

The report of the Maine Commissioner of Industrial & Labor Statistics for 1899 says: "This plant is now one of the best in the State." Garret Schenck, in his report to stockholders at the first Annual Meeting stated that Madison had started making paper in November; was producing at low cost, and that the entire output

of paper and most of the surplus capacity of pulp was under contract. However, the mill was having trouble with low water, the previous summer having been hot and dry, and no great amount of paper was made between the start-up and the end of the year.

Thus began the second round of "vicissitudes" for the Madison mill. The odds were against it. It was small in capacity, both in the industry and in relation to the other mills of the Company. It had unbalanced pulp producing capacity as between groundwood and chemical pulp and it had a persistent power shortage. These factors were compounded by a fiscal policy which was beyond the control of the mill management. The Madison Mill, during most of its life with the Great Northern Paper Company, was the "poor relation". It had little chance, in competition with the other plants, for capital improvements appropriations. A dollar spent at Madison could never earn as much as a dollar spent at Millinocket or East Millinocket. By the same token, any increase in cost, particularly in labor cost, when translated into a per ton figure, multiplied many times at Madison as compared with its effect at the other mills. With only two machines, it lost 50% or more of its production every time one of them went down, and it had other handicaps which were never overcome.

In the middle years, before the depression of the 1930's and before it became necessary to start a major program of replacement of obsolescent equipment in the Penobscot mills, a substantial amount of new work was done, particularly in the direction of improving the power situation and the hastily-built groundwood mill. Later, the mill began to fall heir to equipment which had been outgrown at the other plants, and while a number of sub-

stantial improvements were made, every job was a budget job, and Madison operated under the old New England "use it up, wear it out, make it do or go without" philosophy.

When the mill was built, the Exchange Hotel was right at its back door, between the boiler house and Main Street. This lot was bought by the Company in the fall of 1899, and was put into yard space. In February, 1900, the property owned by Commander Goodrich, mentioned previously, was acquired.

During the spring of 1900, the height of the flashboards on the dam was increased from one to three feet, or to El. 102. Presumably this was done in agreement with the other interested parties, but the raising of the level of the pond and canal flooded the basement of the Madison Woolen Company's mill. A lawsuit was threatened, with damages set at \$22,432. The Company offered \$12,500, and the thing dragged along until very late in 1908 or early in 1909. Settlement was reached out of court, the Company having at its own expense made some changes in the Madison Woolen Company buildings, and the cash adjustment was \$15,000, plus interest at 6% compounded from the year 1902.

At a very early stage, plans were made for expanding the Madison mill. Frank Bowler notes in his diary that on November 25, 1899, plans of a proposed new mill at Madison were received from J. W. Tower and Joe Wallace, of Hardy Ferguson's staff. The original purchase by the Manufacturing Investment Company had included the undeveloped power just downstream from the site of the plant. While this was not included in the transfer of title from Col. O. H. Payne when the mill was purchased, it obviously was set up somewhere in the deal for future negotiation. Derb,

in his article describing the Millinocket mill, says:

"At Madison, the Great Northern Paper Company also has another great undeveloped water power with a sixty-five foot fall, and when it is developed it will have a water power of fourteen thousand horsepower, on which the Company proposes to build another modern pulp and paper mill with a capacity of two hundred tons daily."

This was written in November, 1900. In April of that year, the Company had bought from Col. O.H. Payne the remainder of his interest in the property which he had taken over from the Manufacturing Investment Company. This included the land in Anson; two lots on the river on the Madison side at the lower falls, identified as the "New Mill Site"; the rights to the lower power; the "piling ground" above the railroad bridge, with the lot adjoining it on the north, and the Frederick W. Taylor house and land at Old Point Crossing. This transaction took place at the same time as Col. Payne subscribed for additional stock, and while it does not seem to appear in the record in connection with this subscription, there is little doubt that this property was part of the consideration. A lot in Starks, which might be flowed by a dam on the lower power had been bought in January from William Howard, and in June and December several additional pieces of land along the Madison side of the river, between the Norridgewock line and the old mill were bought from the Weston family and added to the new mill site.

The proposal was to build a new pulp and paper mill on the lower power, at a point known as "Fishing Falls" and it was a very ambitious project. In fact, had it been carried through, there

would have been at Madison another operation the size of Millinocket.

The first phase was to be the construction of a groundwood mill and power plant at this location. New plans were made by Hardy Ferguson's organization, starting in the spring of 1901. Part I of an estimate dated July 10, 1901 calls for "Building dam, canal and grinder room on 43 foot fall at Madison. All construction to be planned for future extension of plant to a six machine paper mill. Equipping wood room and grinder room with sufficient machinery to furnish 400 electrical H.P. to old mill; also to furnish annually 8,000 tons of Ground Wood Pulp to old mill." For this latter purpose, a pipe line from the new construction to the Madison mill was included in the estimate, which totalled \$475,000.

These plans were submitted to the Directors, and they tentatively approved. It would seem that they did not mean to start until the spring of 1902, but Garret Schenck said he could advance the start-up by six months by getting the excavation done and the head-gate section built at once. On August 20th, they allowed him to start, with an appropriation of \$40,000 for the purpose and instructions to incur no other obligation. However, by October a somewhat uncertain decision had been made that the expansion should be carried out, and it was agreed that contracts for materials and construction should be made for the entire mill, but that only the dam and grinder room work should be firmly committed. The expenditure of \$500,000 was authorized.

Surveying had been done starting in March, 1901, (3) and on July 23d, Hardy Ferguson wrote to James Mullen:

"The Great Northern Paper Company proposes to begin immediately upon a large amount of work at Madison, Me., as soon as contract for same can be let. You are hereby respectfully invited to present bids for the work, which consists of the construction of a dam and canal, together with all excavation and foundation necessary for a large mill plant....."

The general contract was awarded to J. B. Mullen & Co. A contract for excavation was made with Mavor & Mc Phail, whose address is variously given as Millinocket, Eagle Lake and Portage Lake. Twelve two-foot, three-pocket grinders were ordered from Holyoke Machine Company, and steel for the grinder room and wood room buildings was contracted with Riter & Conley. Actually, this contract covered steel for an entire pulp and paper mill, but everything except the above was subject to later specification of shipping dates, and could be cancelled on 60 days notice.

Work was started in September, 1901, with the construction of a temporary spur track to the new site. A journal kept by J. H. Houghton on the job is the source of much of the following information. This was the Company's first venture into mass concrete construction instead of the stone masonry usual up to this time. A borrow pit was opened up. Two stone crushers were used, one already set up somewhere in the vicinity, and a new one, located at the south end of the canal, using stone excavated from the site. Steam hoisting engines, drills and pumps were used, but concrete was mixed by hand by Italian laborers. The first concrete was placed, the head-gate section, on October 18, 1901.

Between this date and September 2, 1902, the canal, apparently mostly earth excavation, was dug; ledge was excavated and prepared for the wing wall and other walls around the canal, the log sluice and spillway abutment, and some ledge was removed in preparation for the construction of the spillway section, on both the east and west shores. All of this work seems to have been done in the dry. Excavation for the grinder room, wheel pits and tailrace was almost entirely ledge, and was done in a coffer, drilling and removing material by day, with heavy blasts at night. The site for a "riffler room" was also excavated. This also appears to have been done in the dry, and the material removed was used to fill the grinder room coffer. Concrete work was completed on the wing wall, the head-gate section, the bottom of the log sluice and the east canal wall. The entire bottom of the grinder room, wheel pits and tailrace was placed "except the south strip", and the west wall of the grinder room was at least partly completed. The head gates and hoists were installed.

At the same time as this work was going on, or at least during the fall and early winter, a crew under the same contract was at work removing ledge from the river bed below the old dam at Madison, on the Anson side, and there were complaints about pieces of stone being blown clear across the river into the town of Madison.

While the other jobs which the Company had done must have had their troubles, this one seems to have had more than its share of hard luck, beginning on November 30, 1901, when the water boy was badly injured while playing with dynamite. On December 15, 1901, the biggest flood experienced on the river since 1869 closed down

the job, washed the fill out of the coffer, tipped over the hoisting engines and filled the grinder room excavation with ice, dirt and debris. This same flood wrecked the generator room at the Madison mill, taking out one of the brick walls, and repairs at this location were added to the job. It also carried away the old toll bridge, and a ferry was used from the spring of 1902 until October of that year, when a new bridge was completed. (4) There was a lot of bad weather during the winter, with much snow, and many days too cold to pour concrete. Ice formed on the ledge and on the days-work joints, and this had to be cleaned off between pours. Sand had to be heated, and steam was used on the mixing boards. Following the December flood, they were driven out of the coffer no less than eight different times between January 24th and the end of June by high water, once when gates were opened at Moosehead without notice. On three of the earlier occasions, the fill was washed out of the coffer, and in March they resorted to loading it with rock and packing stone around the outside. A number of small cofferers had to be built inside the large one, because of leaks.

There were breakdowns in the crusher plants, the boilers, the pumps and the engines. They ran out of coal. They ran out of cement. A month after the flood of December 15th there were three serious accidents, at least two of which were caused by dynamite scattered around the job by high water. A man was killed in a fall on the generator room job. In August, 1902, there was a three-day strike by the Italian laborers. What they were being paid is unknown, but they demanded \$1.75 a day. James Mullen arrived on the morning of the third day, and they went back to work with no raise.

It is recorded that "the troublesome ones left A.M. and P.M."

As has been noted, this ambitious project was approached cautiously, in an atmosphere of uncertainty. As early as February, 1902, Garret Schenck wrote a letter to Col. O.H. Payne in which he recommended discontinuing the job, and on the 18th the Executive Committee of the Directors sent him a telegram reading in part:

"Capt. Hayes reports Col. O.H. Payne entirely approves suggestion your letter 14th inst. with which we agree that all construction at Madison mill should be stopped and contracts cancelled except such work to protect work which has been done....."

Why this was not done at once is not known. On April 17th, Garret Schenck reported to the Directors that work would be suspended in two or three weeks. A month later, A. Ledyard Smith came down to the job to talk about shutting it down, but they kept on working. Emma Folsom Clark's "History of Madison" has a dairy entry some time in the summer of 1902: "Dissatisfaction is rife over the building of the Great Northern's new mill at Fishing Falls." Nobody knows who was dissatisfied, or why. Finally, on September 2, 1902, James Mullen telephoned from Bangor, issuing instructions to cease work forthwith, and by September 15th everything was cleaned up and moved out; the twelve grinders, which had been received and unloaded, were shipped to Millinocket. Cancellation of the various contracts was negotiated, and the project was abandoned.

A letter from James Mullen to Hardy Ferguson, dated October 7, 1902, is of interest for some of the figures it contains, and reads in part as follows:

"As requested by you when I was at Millinocket a week ago I enclose your bill for returned freight and also expenses from September 1901 until we quit work at Madison in September 1902.

Expenses	Board for one year	\$360.00
	Four mileage books after January 1902	80.00
	Tickets over Somerset Road	60.00
Returned Freight		<u>\$140.00</u>
		<u>\$640.00</u>

I have included no charge on machinery for repairs that was used on the work proper, although we paid some ninety-six or ninety-seven dollars on the engine that was rolled over in the freshet last December. I also make no charge for the hoisting engines that were used on the log piling at Madison.

"The four items which I have just named here is practically all there is, and as my board cost only one dollar per day, I do not think you will call that very extravagant....."

There does not seem to be anything in the official records to explain why this job was discontinued. The Company was short of money at that time, as will be seen, but this was as much the case in 1901 when the work was started as it was in 1902 when it was stopped. The estimate of July 10, 1901 included as Parts II and III the construction of a four-machine addition to the Millinocket mill and an increase in water storage on the Penobscot, but the Millinocket scheme was an alternate, and it was not intended to do both at once. Whatever the situation may have been, all expansion plans were dropped for several years.

It has been said that the reason for giving up the idea of an expansion at Madison was that there was no control of flooding on the river, and that there was no good holding ground for large quantities of logs. These reasons would have been valid, but if they were the determining factors per se, it is hard to see why the project was ever contemplated at all. This statement, however, gives rise to a conjecture, wholly the writer's and not supported by any evidence.

In 1901, at the beginning of the first sitting of the Maine Legislature after the building of the Millinocket mill, a bill was introduced to charter the West Branch Driving and Reservoir Dam Company, which would have control of the West Branch of the Penobscot River. The Great Northern Paper Company was behind this, and the story will be told in another place. This bill met with the most bitter opposition, and had to be withdrawn for re-drafting. Now, it was the sincere conviction of the management of the Company that the security of an operation as large as that at Millinocket required control of the flow of the river above it. As has been seen, the proposed Madison development would have been just as great. It seems reasonable, then, to suppose that the Company had in mind eventual similar control of the Kennebec. In view of the violent reaction to the West Branch bill, and its uncertain future in 1902, it may be that it was decided not to further antagonize public opinion and possibly jeopardize the essential West Branch legislation, which was to be attempted again at the next session in 1903, by the implications of this large commitment at Madison. In 1903 and 1904 there was a business recession. By the time this was over, the Company had control on the Penobscot,

and when expansion materialized, it was on that river. This hypothesis might explain the rather cautious approach, and Garret Schenck's recommendation that the job be held up so soon after it was started. It might also explain why "dissatisfaction was rife". At least, it is plausible.

Anyway, no more work was done. The lower power site and the construction that had been started there were sold to the Hollingsworth & Whitney Company for \$350,000, cash, in August, 1907, after the East Millinocket mill had been built and the Company was short of funds. The Great Northern Paper Company had mortgaged its properties in June, 1902, but the lower power at Madison, and the construction there had been excepted. This mortgage was therefore no obstacle to the transaction, but, in its title search, Hollingsworth & Whitney turned up the old Manufacturing Investment Company mortgage for \$500,000. This had never been satisfied, but had been held by the Great Northern Paper Company "to defeat any junior or inferior lien that may be attached to the property". As we noted in an earlier chapter, the bonds were held by Col. O.H. Payne, and we should add here "for the benefit of the title acquired by the Great Northern Paper Co. " Hollingsworth & Whitney felt that this situation constituted an encumbrance. Col. O.H. Payne therefore agreed that he would undertake to arrange for discharge of this mortgage not later than twenty years from the time that he acquired the Madison mill. This seems to have been satisfactory, but nothing was done about it in a formal way. Late in 1908, Hollingsworth & Whitney began to push, and in December of that year Col. O.H. Payne finally made a definite commitment. The mortgage was eventually cleared, satisfaction being recorded

by the Somerset County Registry of Deeds in June, 1914. Payment was made by the Interlake Paper Company, as successor to the Manufacturing Investment Company. Hollingsworth & Whitney completed the construction of the dam and groundwood mill, and operated the plant sporadically. It was shut down during the depression of the 1930's, at which time they offered to sell it back to Great Northern for a modest price, but by that time the equipment was found to be badly deteriorated; "nothing but a lot of rust", said William A. Whitcomb, then President, and the Company was not interested.

The statement has also been made that plans for an enlargement of the Madison mill were given up because satisfactory freight rates could not be negotiated. This, however, is believed to refer to some possible later consideration of expansion, probably before 1920. After 1920, as far as is known, there were never any plans for a larger plant at Madison.

The financial record of the mill, used as a guide in writing this chapter, is confused by changes over the years in cost reporting and bookkeeping procedures. It has not seemed worth while to try to adjust the figures, and except as noted they will be used as they appeared on the books at the time.

Pulpwood operations for the Madison mill were carried on independently of those for the other plants by the Spruce Wood Department, although purchased wood for all mills was handled by a common organization. Wood for the mill was set up in a separate inventory for control of quantity, but the cost of all pulpwood was lumped together in a common figure and was charged to each

mill at a common figure, with differentials for the amount of cull inherent in the operations of each plant. This sometimes helped, but more often hurt Madison as it had to carry part of the overhead expense for administration of the proportionately much larger timberland holdings for the other mills, even part of the expense of driving of wood on the West Branch of the Penobscot River, which was usually higher than the legal tolls. The nature of the papers made in the years after 1929 also necessitated much heavier culling than at the other mills, and the cost of wood was always a sore point with the Madison management. On the other hand, the Company's depreciation set-up, under which all depreciation on the three plants was lumped into one figure and charged out on a yearly tonnage basis, favored Madison by something just under \$100,000 per year. Just when this arrangement was made is uncertain, but it was probably in 1913. It was in effect until 1952, when each mill was put on its own as regards depreciation. This situation is mentioned only to make the point that in many of the years when the figures showed the mill to be operating at a profit it was actually in the red, and the management was aware of it.

While the Madison plant began as a newsprint mill, the nature of the papers produced there underwent many changes over a long period. Broadly, both machines made newsprint through the year 1903. In 1904, both were shifted to the production of manila paper, a natural-color medium-weight machine finish sheet containing groundwood in varying proportions and used at that time for wrapping paper and for the manufacture of bags and envelopes. This grade was made on both machines until July 1, 1914, when No. 1 was put back on newsprint. Early in 1915, No. 2 machine was changed to sulphite bag paper, and apart from a little newsprint in 1921,

produced nothing but bag paper until 1924. No. 1 machine also made a small amount of this grade, off and on, in this period, in addition to newsprint. Starting in 1924, both machines made nothing but newsprint for the next five years.

In 1929, No. 2 machine began to turn out a miscellany of sulphite specialty papers, and except for small emergency runs, never made newsprint again. No. 1 continued on newsprint until 1932, when it was shifted to the production of a variety of groundwood specialty papers. By 1933, this machine was entirely on groundwood specialties, and with the exception of some newsprint from 1937 to 1939, made these grades until 1953, when a small amount of newsprint was again produced. In 1954, No. 2 machine was shut down and No. 1 went back almost entirely to newsprint until the mill was sold in July, 1955. These changes will be examined in more detail as the story progresses.

Not much is known about the operation of the mill in the very early years. During 1900, 1901, and 1902, it ran at practically full capacity on newsprint, averaging about 14,000 tons of paper, in addition to around 9,000 tons of market sulphite pulp yearly. They were running a seven-day week at that time, averaging about 330 days per year. Mill earnings in this period were modest; about \$100,000 per year. The plant was shut down for about 30 days in each of the 1903 and 1904 years for lack of orders. In 1903 additional time was lost first because of a flash flood that caused quite a lot of damage, and then again late in the year for low water. Pulp shipments dropped to less than 3,000 tons in 1904 and earnings practically vanished. It was at this time that the mill was taken out of the newsprint market and shifted to the

production of manila paper. Earnings immediately improved, averaging around \$190,000 per year from 1905 to 1914, when the mill went back onto newsprint. During this period, the plant used more of its chemical pulp in its own papers, and market sales of sulphite averaged only about 3,600 tons yearly. Sunday operation had been discontinued in 1911, but machine output was gradually pushed up to around 18,000 tons in 1914, partly due to the making of weights of paper heavier than newsprint.

The shift to sulphite papers cannot be attributed entirely to the situation in the newsprint market. The groundwood mill had never had enough power. It was necessary to buy pulp from other mills during the first year of operation, and on many later occasions. The production of sulphite grades, as long as there was a market for them, was a partial solution to this problem.

As early as 1903, studies were made of the possibility of widening the canal to get a greater draft of water through it to the wheels, but apparently nothing was done about it. Further studies were made in 1907, and this time there was some excavation on the westerly side of the canal, just below the headgates, and the westerly end of the headgate section was rebuilt with three additional gates, which helped a little. In this year the Somerset Railroad was taken over by the Maine Central.

For some reason, a small isolated lot of land was bought from W.H. Blackwell in 1904. This was adjacent to the upriver piling ground. In May, 1905, the log pile at this location burned, with a loss of 1,600 - 2,000 cords. The following year the old covered railroad bridge also burned.

While no formal records on capital improvements are available before 1911, there is some information on early changes around the machines. The slitter and rewinder sections were replaced between 1902 and 1905 with what was called a Witham winder, on which there are no details except that it was a single-drum affair, and there were several rebuilds of it during this period. In 1902, Hardy Ferguson designed what became known as the "Ferguson Quarter-turn Drive", an arrangement whereby the sections of the paper machine could be driven by belts, which by a system of idler pulleys were twisted so as to deliver power to pulleys on shafts set at right angles to the axis of the main drive shaft. This was a great improvement over the old mitre gear corner stands, particularly for heavy starting loads such as were represented by the dryer section, although it took up a lot of room. In 1905, the dryers of both machines were equipped with these drives. Also in this year, the Witham rewinders were rebuilt into a two-drum version, one of the very early applications of the two-drum principle. Previous to this, in 1902, the first salvage rewinder used by the Great Northern Paper Company was installed at Madison. This was a 90" "Witham Patent" winder.

In 1911, four dryers were added to each machine, and they were speeded up. The coal storage was rearranged and an industrial track, with cars pulled by a cable, was provided to move coal into the boiler house. The bays between the stone piers under the digesters were walled up at this time and divided horizontally to make an individual blowpit for each digester. Drainage from these was run into a spout and thence back into the lower compartment, or "saveall", in an effort to reduce the loss of fibre. The material which collected in the savealls was mostly coarse, and

contained a great deal of dirt. It was put through a Claflin Refiner, taken off a wet machine and shipped to Millinocket for the production of wrapping paper. In 1913, the original steam engines driving the paper machines were removed and each was replaced by two Harrisburg reciprocating engines, one driving a constant speed shaft providing power to the pumps, screen and agitators. This change was recommended by Clarence Hill-Smith, a consulting steam engineer. In this same year the upriver piling ground area was further increased by the purchase from N.A. Weston of a piece of land from the railroad bridge northward, abutting the Blackwell lot and completely surrounding the old piling ground, and extending well up-river from it. In 1914, all the old sulphite flat screens were replaced by Baker & Shevlin knotters and Improved Paper Machinery Company rotary screens. The beater room floor was replaced in steel and concrete and four new Jones tub beaters were installed. The size and alum system was also improved. The change back to newsprint some time in 1914 on No. 1 machine was the result of the increased demand and steadier prices for this grade which followed the outbreak of World War I. At about the same time, No. 2 machine was shifted from manila to sulphite bag paper. In this year also the Company's old boom house was moved to a location on Heald Street and made into a new residence for the Superintendent. (5) The next year sulphite pulp sales picked up, and the old sulphite wet machines and hydraulic presses, carried over from Manufacturing Investment Company days were removed and replaced by two Rogers wet machines. A start may also have been made on a cribwork retaining wall on the river side of the mill. For the next

fifteen years the mill was relatively prosperous. Without any significant changes to the machines, production had been raised to around 23,000 tons per year in 1921. During this period, that is, between 1914 and 1929, earnings averaged some \$300,000 per year, a respectable showing.

In 1916, the walls of the machine room were entirely rebuilt, and the roof was raised. In order to do this without shutting down, temporary walls covered with dryer felt were erected back of each machine. A first aid room was also added.

Speaking about the job of rebuilding the walls of the machine room, it has been said that when the Great Northern Paper Company acquired the Madison mill, it was found that the foundations had been poorly built, and that a lot had to be done to prevent the buildings from falling down. We have found no record of any great amount of this kind of repair. The wooden construction around the water wheels had of course deteriorated, and the acid tower was in rough shape, but the entire water-power generating section of the mill had to be rebuilt anyway, and the acid-making system was modernized as part of the conversion of the mill. In 1908, the digester building had been reported in poor condition by the insurance people, and a considerable amount of work had to be done on this, including the replacement of the upper floors and chip bins with concrete instead of wood, but this was nearly twenty years after the plant was built, and it was twenty-six years before the machine room job was done. This does not indicate that the original construction was the best in the world, but on the other hand, the conditions under which this plant was operated for years,

with the digester foundations forming the walls of the blowpits, and with inefficient ventilation in the machine room, were not conducive to long building life in these areas.

There were two other developments in 1916 for which we have no background except that from what happened a few years later, Garret Schenck seems to have decided that the Madison operation had either to be improved or disposed of, and these alternatives would appear to have been under consideration at the same time.

On October 17th, Hardy Ferguson submitted a plan and preliminary estimate of cost for "altering the Madison Mill to produce supercalendered book paper". This scheme called for extending the machine room, screen room beater room and finishing room; the construction of 45-ton soda pulp mill and recovery plant; enlargement of the steam plant and the addition of steam-electric generating plant; an electrolytic bleach-making system and a bleaching plant; more grinder capacity; the addition of a third 145" paper machine with the necessary stock preparation equipment, and the installation of eight supercalenders with winders, all at an estimated cost of approximately \$1,000,000. If this seems low, the price of the paper machine and drive at this time was only \$120,000, but it was a lot of money, as Hardy Ferguson said "considering the value and capacity of the existing plant". We can find no record that this proposal was ever brought to the Board of Directors.

At the same time, Garret Schenck seems to have been considering the sale of the mill. We have no information on this, except a November entry in the diary of William A. Whitcomb, a

man about whom we will hear a great deal more later on:

"Mr. Schenck in New York. Saw Paine (sic) Whitney and Commodore Ledyard about selling Madison and was refused."

This is an example of one of the many times we have come across this confusion between the names Paine and Payne. The Director to whom Garret Schenck had talked was of course Payne Whitney.

As we will see, there was another abortive move to sell, clearly with the approval of the Directors, within the next few years. Just why the interest in selling at this particular period we do not know, as the mill was relatively prosperous,

The driving of long logs for the mill was discontinued in 1917. Up to that time, logs had been run down the canal to the wood room, or were pulled out of the canal and decked on the piling ground for winter use, by steam engines and winches. The piling ground was in its old location, between Main Street and the mill, along the east bank of the canal, logs being put back into the canal during the winter as required. Some time before 1917, a fixed wooden stacker had been erected on part of the old piling ground for storing wood in short lengths. Probably around the same time, but possibly before this, a spur track had been run along the east side of the mill, with a conveyor running beside it, between the track and the buildings, into the wood room, for handling four-foot pulpwood delivered by rail. In 1918, a drum barker was installed in the old wheel house under the wood room, a conveyor running from this at a steep angle up

into the wood room itself, where a number of the old knife bar-
kers were retained for cleaning up partly barked wood. The old
water wheels driving wood room and screen equipment must have
been removed at this point. In this year also, Reagan stokers
were installed under all the boilers. They apparently were not
satisfactory, as a year later the four Babcock & Wilcox boilers
were converted to oil, Hammel burner equipment being installed.

At this time, the coal trestle was removed, and a rectangular
reinforced concrete oil storage tank was built underground in the
mill yard east and south of the boiler house. In connection with
this, or at least at this time, four small parcels of land lying
between the easterly line of the mill yard property and the
railroad right-of-way, were purchased from the Madison Woolen Com-
pany and the American Woolen Company. This purchase included the
lot on Main Street over which the Company had previously had only
a right-of-way for entrance to the mill yard. It left on the east
only one piece of land between the mill yard and the railroad right-
of-way, on which stood a grist mill owned by the Weston family.
This apparently had power rights which were acquired by the Manu-
facturing Investment Company, with the provision in the deed that
the latter furnish 50 h.p., day and night, for the operation of
the grist mill. It is not known how the Manufacturing Investment
Company met this commitment, but the Great Northern Paper Company,
which fell heir to the obligation, put in a motor. This land and
the building were bought by the Company at a later date.

The oil tank was designed and built by Theodore I. Ellis, of
Providence, R.I. It was originally intended to have an 8" bottom,

but quicksand was discovered in the excavation, and the thickness of the floor was increased to 12". However, sufficient consideration had not been given to uplift, and while this tank was in use for many years, it tended to float; cracked, and gave a lot of trouble from leakage of water in and oil out.

In 1918 also, one or more of the old horizontal generator and water wheel units were removed and replaced by one Allis-Chalmers 500 K.W. vertical hydro-electric unit. This installation was not completed until 1921, and saw very little use, sitting idle, after very short period of operation, for nearly thirty years. As far as is known, this was the first departure from General Electric generating or motor equipment in any Great Northern mill, and it was the last for a long time. There is no information as to why this particular unit was chosen. In 1918 also, the presses on No. 1 machine were rearranged, four dryers were moved from the wet end to the dry end, Ferguson quarter-turn drives were put on the wire and two presses, and a Pope reel was installed. In that year, the books show that the mill earned the fantastic sum of \$1,027,000.

Not too much happened in 1919, but in 1920, as will be seen later, there was a newsprint famine, with spot market prices rising to extremely high figures. In spite of this, No. 2 machine continued to make bag paper, for reasons which will become clear. It did make a little news in 1921. However, this shortage of newsprint brought on a development which will be of interest as it relates to the conditions of that time which will be considered in another place.

Some time early in 1920, negotiations were entered into with

the publisher William Randolph Hearst for the sale of the Madison mill. Hearst owned some timberland above Moosehead Lake, and while there is no record of the fact, it seems quite clear from the correspondence that he made the initial move, although except for the last act all negotiations were carried on through his representatives and attorneys.

Garret Schenck was willing to sell, and knew exactly what he wanted -- \$4,000,000 for the mill and the other property involved, which included inventory, the Superintendent's house and twelve other dwellings; land and leases around Madison and Anson and along the river; piers, booms and river improvements; the Company's one-third interest in the water power at Caratunk, its interest in four log driving companies, and its timberland holdings in East Moxie, Pierce Pond, Forsythe, Holeb, Lowelltown, Caratunk, Crockertown, Mt. Abram and Tomhegan -- about 148,000 acres in total; and he did not want any mortgage deal.

On May 7, 1920, he wrote a long letter to Hearst's representative, E. A. Westfall of Boston, in which he outlined the proposition. As has been said, Madison was always short of power. Knowing this, he had worked out an arrangement with the Central Maine Power Company, under which the new owner could buy 2,500 h.p. for the grinders -- enough to produce another 40 tons of pulp. Hardy Ferguson was to be engaged to make a report on the physical condition of the mill, and Fred Gilbert was to estimate the stand of pulpwood on the timberlands. These studies were to be completed by the middle of July, at which time he expected an answer. He then went on to say:

"In the event that you decide to purchase the properties,

my suggestion and advice is, that you authorize us to put both machines at Madison in a proper condition, at your expense, to make news print paper to the best advantage, without spending any exhorbitant amount of money on them, but only the necessary amount of money -- as you know that the one machine is now making news print, and can be run as it is, while the other is making fibre papers and cannot make news print until proper adjustments are made on the dry end...."

"At the same time you could give orders for the installation of additional grinders, and the making of a contract for the electrical power, and by January first next the mill should be in a position to turn out news paper on both machines -- and I don't believe you can do it any earlier.

"This is no hardship, in my opinion, for the reason that under the present financial conditions it is very difficult to raise large sums of money quickly, and this would give you an opportunity to make your arrangements for your financing, covering the period of six or seven months. "

Then he spoke with the voice of the old Great Northern, and the deeper sense of this will be apparent later on:

"And further, as one machine is under contract for news print up to January first, and the other only under contract from quarter to quarter, so far as making prices is concerned, it would not be the wish of the Great Northern Paper Company to have the contracts on the fibre machine cancelled by putting an arbitrary price on the paper, and leaving a bad taste in the mouths of those who have been customers for many years."

The letter then discussed the possibility of converting the production to book paper by the addition of a soda mill, and stated that some time "previous to the war" a cash offer had been received for the mill, for conversion to this grade, which was better than the deal he was now offering. His terms were \$1,500,000 cash, of which \$900,000 was to cover inventory, the remainder to be paid in four years, at the rate of about \$850,000 per year, payment of such installments to be secured to the satisfaction of the Company, and to bear 6-1/2% interest. He estimated a cost of \$60,000 to \$75,000 to put the mill in shape to make newsprint on both machines, this expense to be borne by the purchaser.

As might be expected, Hearst's people considered this to be a negotiable proposal. Garret Schenck was open to negotiation, but just so far. Only July 1, 1920, he dictated a letter by telephone to his Boston attorney, Sheldon E. Wardwell, reading in part:

"We are willing to take a million down, instead of a million five hundred thousand, if they will pay the balance in \$500,000 payments, six months apart, from January first; but we must be fully protected.

"And I think we ought to see if the deal is going through, and tie a knot in it by coming to an understanding.

"They want to form a company, but how they form a company and we still hold title I can't understand, but they may be able to work it out."

This seems to have been agreeable, although later some question developed as to how Garret Schenck intended the \$500,000 payments to be made, but the matter of security to guarantee these payments was where the proposition came to grief. On July 9th,

Sheldon Wardwell reported that Mr. Hearst's attorney, Geoffrey Konta, was very much surprised that the Company would not simply accept Hearst's personal guarantee, and that he also expected to obtain title on payment of the first installment. Nevertheless, he proceeded to make arrangements for examination of the title, pending instructions from Hearst, who was still in California, and the Company engaged an independent forester to put a value on the timberlands. Sheldon Wardwell seemed to feel that the deal would work out. On July 31st he wrote to Konta:

"It seems to me that there is no reason why we should not proceed with the agreement so as to be ready when we secure the necessary information. I think your people would like to avoid further delay, but my real interest is that I am planning to go fishing in Newfoundland and hope to start the last week in August. If I don't, the season will be over, and my vacation ruined."

About this time another problem arose. Groundwood was apparently being shipped to Madison from Millinocket, and the Hearst people tried to make this part of the deal, because, for one thing, groundwood made from the proposed purchased power would cost an extra \$11.00 or \$12.00 a ton. On August 7th, Sheldon Wardwell wrote to Garret Schenck:

"Apparently we are going to get along all right on the contract except the question of pulp supply and security.

As to pulp supply, I told him.....that I believe he could secure the same amount of groundwood which you normally ship to Madison, at market, but that I did not believe you had a surplus for another machine. He seemed to think

that they ought to obtain quite a large supply at cost....

He thought Hearst's note should be sufficient security and objected to putting up the question of deposit of collateral. While I insisted on the point, I think it very possible that we may have to back down, but of course I shall not do so without instructions.

Hearst is, I think, still gunning around for other mills. If my information as to the prices of the mills offered him is correct, he will think he has a bargain at Madison. "

He received an immediate, emphatic reply, in Garret Schenck's own hand:

"Yours of the 7th. No pulp supply at cost was considered for a minute. Only proper and satisfactory security from Hearst, approved by our own Directors will be acceptable. As you say, Hearst has a good deal in Madison and he must 'come across'. I am rather inclined to hold him to the original deal rather than making it easier."

On August 12th, Sheldon Warwell advised again that details of the contract seemed to be settled except the questions of pulp supply and security, saying that he was insisting that pulp supply was outside the contract. As to collateral, he wrote:

"The main objection on their part seems to be pride; --the feeling that Mr. Hearst's note is good without protection. Personally, I think it is."

Garret Schenck didn't buy this. His reply, again in his own hand -- he was writing from his summer home in Falmouth:

"Yours of 12th. Hearst crowd will have to swallow their pride & fix the security end of the deal in a manner that will be acceptable to our Directors. Hearst's note may be and probably is good. We might as well bring matters to a head with them on the issue -- am sure others will buy if Hearst don't. I shall be at office Monday the 23d. Let's talk it over and decide."

Time went by; the pulp problem seems to have been solved; the title search ran into trouble, the proposed improvements to the mill were not made, and the Company began to make plans of its own for the plant, to be carried out if the deal did not go through. Sheldon Wardwell continued to agonize about his vacation, and Garret Schenck finally told him, late in September, to go, but that he wanted a decision as soon as he got back. Hearst was still in California, and had not been heard from, at least as far as this transaction was concerned. On October 18th, back from his fishing trip, Sheldon Wardwell told Konta that Garret Schenck was getting impatient; that everything seemed to be organized except the matter of security, and that they had better get with it and get the contract ready for the Great Northern Directors, several of whom were lawyers who would be inclined to pick it apart and cause further delay. In reply, he was advised that Mr. Hearst would be back by the end of October, and that they should then be able to bring the matter to conclusion.

Nothing happened when Mr. Hearst returned if he returned, and Garret Schenck had had enough. On November 4th he wrote E. A. Westfall a one-line letter asking him to be in Boston on Monday, November 8th. Whatever their discussion, he left with the follow-

ing letter in his pocket:

"William Randolph Hearst, Esq.

119 W. 40th Street, New York, N.Y.

Dear Sir:

Having had no reply from you up to this time as to the purchase of the Madison Mill, timberlands and inventory; and as it is very necessary that we should proceed with our plans that we had in view regarding the Madison mill; and further, with regard to the sale of the product of that mill for 1921; we wish to notify you that, as of Wednesday, November tenth, we consider our obligation to sell you the property ended.

Any bills that we have incurred on your account, in the exploration of timberlands, or looking up titles, we will have sent you through our Treasurer's office.

Very truly yours,

Garret Schenck

President"

This incident was typical William Randolph Hearst. The writer knows that Garret Schenck did not think too highly of him, and as we have seen, was not inclined to compromise very much on this deal. Sheldon Wardwell, a few days later, indicated to Konta that there might be a possibility of reopening negotiations some time in the future, but he was just whistling in the dark. The matter was closed.

William A. Whitcomb, who was General Manager at this time, had for one reason or another little to do with all this, and he had not waited for Mr. Hearst to make up his mind. During this year 1920, a Jenssen two-tower acid system was installed at the Madison

mill, and a new feedwater system was provided for the steam plant. He also proceeded to buy several pieces of property along Main Street, mentioned in another place, to add to the mill yard space.

During the course of the foregoing negotiations, mention was made a number of times that the Company had plans for the mill with which it intended to proceed if the deal did not go through. Chief among these was a redevelopment of the water power. Hardy Ferguson had been working on this, as an independent consultant, having left the Company some ten years before. Eight different plans had been worked out. Six of these involved an extension of the groundwood mill and generating station up along the west side of the canal, almost to the Indian Spring mill, embodying various combinations of grinder installations and hydro-electric generating equipment; different types of grinders and different means of driving them, all based on using the existing canal. All these arrangements depended upon a scheme to widen the canal by undercutting the Madison Woolen Company buildings, supporting them on steel; and by lengthening the span of the highway bridge over the canal on Main Street. Arrangements were concluded with the town, but the Madison Woolen Company seems to have balked, and the project was abandoned in favor of one of the two alternates for development on the Anson side, which will be described later. In the meantime, there was another interesting development.

Elmer Pope (1858-1922) the Company's inventor, of whom more later, had been working at Millinocket on ways and means of making paper at higher speeds. One of the problems of high-speed operation was the difficulty in handling the paper to and through the

calender stack. Pope had worked out a method for doing this, but it seemed to him that a more logical solution was to eliminate the stack entirely, obtaining the finish on the paper by other means. He had tried this at Millinocket some years before, unsuccessfully, but had new thoughts. At the same time, his assistant, Hervey Cram, (1889-1963) conceived the idea that the fourdrinier, with its expensive wire and other complications could also be eliminated by forming the sheet on a single cylinder, properly designed for high speed operation, and both of them had new ideas about other elements of machine design. The result of this thinking was the curious paper machine built by Rice Barton & Fales and installed at Madison starting in 1922, replacing the original No. 1 unit.

There is no information as to why this particular installation was made at Madison. It has been said that it was at one time the Company's intention to use the Madison mill as a sort of experimental plant. Whether this is the reason the experiment was conducted there, or whether the thought grew out of the fact, is not known.

Installation of the equipment began some time in 1922. Between this time and the late summer of the following year, the machine was shut down a total of 234 days for installation, alterations and repairs, and lost production equivalent to a full year's tonnage. Records of the experiment have not been found, and no one recalls the exact sequence of events. However, from the content and dates of old drawings and the memory of a few people, an account of the physical part of the project has been pieced together.

The old vertical reel had been replaced in 1918 by one of the new type invented by this same Elmer Pope. This and the winder were relocated, the calender stack was removed, and a section of "calender dryers" was installed. This was much different from the arrangement that had previously been tried out at Millinocket. It consisted of three short calender frames, joined together in a continuous structure, in which were mounted three pairs of 36" dryers on 20" diameter journals in plain bearings. The bottom rolls were fitted with herringbone gears, and were driven by a Ferguson quarter-turn. The upper rolls, mounted in loose ways, were driven by contact with the lower rolls, were weighted mechanically, and were provided with hydraulic lifts. There were top and bottom dryer felts, with a 36" felt dryer in each. All of the rolls, except the last top, were fitted with doctors. The path of the sheet through this section was conventional, except of course that it was nipped between each pair of rolls. It passed directly to the reel under a spring roll. The dryers in this section were of heavy shell construction, were carefully ground, crowned and polished, and the arrangement apparently worked reasonably well at the speed at which the machine was running at the time -- something under 400 feet per minute.

The next step was the installation of the cylinder former. The old fourdrinier was removed, leaving a lot of room at the wet end. The vat for the cylinder was a wooden affair, with a semi-cylindrical bottom and cast iron supporting parts. Stock from the screen collector box passed through a flow box with overflows at each end, over and under a series of baffles and over a dam into the vat, overflowing again on the other side of the cylin-

der, which ran almost submerged. This cylinder was 60" in diameter, wire covered, supported on a spider on a central shaft in anti-friction bearings. Power was taken from the first press drive shaft through cone pulleys and a Farnham drive, which appears to have been nothing more than two sets of bevelled pinions. The cylinder was slightly off-center of the vat toward the press section. The 30" rubber-covered couch roll was conventionally mounted and mechanically weighted. The felt, after picking up the sheet from the cylinder, went directly through a 22" Millspaugh type suction press, probably the first suction press used by Great Northern. The drawings show this followed by four plain presses with 24" rubber-covered bottom and gun metal top rolls, driven by Ferguson quarter-turns.

This wet end appears to have made a sheet which could not be pressed sufficiently, without crushing, to be dried in the old dryer part. Accordingly, the old dryers were removed, the brick arch foundations under the machine were torn out and replaced with steel columns on footings, and a complete new dryer section was installed. This consisted of thirty-six 60" dryers in plain bearings, with two 48" felt dryers in each felt. Although a similar arrangement at Millinocket had not produced any outstanding results, these dryers were for some reason mounted one directly over the other, rather than in the usual staggered pattern. The probable thought in this arrangement was to improve air circulation, but it resulted in an unusual gear train. Another innovation was that while the dryers were driven by two separate Ferguson quarter-turns, they were all geared together in one unit, a radical departure from the normal dryer part of two or more separate sections.

This superimposed arrangement made it difficult to thread

the dryers by hand, as was the practice in Great Northern mills at the speed of the time, but it had been found that the paper could be passed by air by putting a doctor with an air jet in it on each dryer. This dryer part was designed to run at a speed of 1,000 feet per minute, and was so built that it allowed the machine to be rated 138" instead of 136" as before. When it was installed, one of the four plain presses was removed. Elmer Pope had died quite early in the course of these events, and Hervey Cram was in charge of the experiment after his death.

A minor mystery arose later out of this installation. The thirty-four dryers from the original machine were not scrapped, but were stored on the river-bank below the finishing room, and in a subsequent period of high water, probably in 1923, were washed away and went down into the flowage of the Hollingsworth & Whitney dam. During one of the war-time scrap drives, it was recalled that all of this beautiful cast iron must be in the flowage, and at a time when the pond had to be drawn down a diver was engaged, a winch was set up on the shore and a crew was organized to salvage the sunken treasure. However, as the water went down, a careful search disclosed only seven of the cylinders in the flowage and one in the canal. What happened to the rest is anybody's guess. It hardly seems possible that they went out to sea, but as far as it known, none of them were ever found along the river.

With the new dryers installed, efforts were made to increase the speed of the machine, but it was now found that at some point beyond 400 feet per minute centrifugal force threw the pulp off the up-running side of the cylinder, under the felt, and everything came to a halt again.

Dismayed but undiscouraged, the experimenters went to work on a more sophisticated design. This took the form of a new semi-cylindrical vat, with a baffled flow box and overflows. The cylinder was again 60 inches diameter, but was made of cast bronze, one inch thick, open ended. This was mounted on trunnion wheels at both ends. These were on anti-friction bearings, and ran in flanged tracks mounted on the shell. The cylinder was driven by two spur pinions on a cross shaft, engaging ring gears at each end of the cylinder and taking power through cone pulleys from the first press drive shaft. The shell was drilled in a square grid pattern. The holes were countersunk, and were all interconnected by shallow grooves cut into the face of the shell. Over this face was a wire cover.

The cylinder was set well off-center of the vat, almost touching on the up-running side. Stock did not overflow into the vat, but was contained by a dam sealed against the wire cover on the face of the cylinder at about the center-line on the down-running side. The stock in effect reached the forming surface under a head of about 30 inches, travelled along with the rotation of the cylinder and overflowed a small amount over a dam on the up-running side. An internal suction box, 10 inches wide, connected to a Nash pump, was located on the up-running side, at about 45 degrees from vertical, and in advance of the point of contact of the pick-up felt. There was no couch roll. A suction box inside the pick-up felt, tangent to the cylinder at the top, removed the sheet, which then went into the suction press. At some point in the experiment, what was called a "slice", a sort of vertical skimmer blade, was placed just where the cylinder left the stock, apparently in an effort to prevent the pulp, which was of course

very thick at this point, from running up on the cylinder.

This contrivance also formed a sheet, which again threw off at speeds above 400 feet per minute. The calender dryers were also a failure at higher speeds. At the July 1923 meeting of the Board of Directors, Garret Schenck reported that the whole thing was unsuccessful. The cylinder, suction first press and calender dryers were removed in the fall of that year, a Rice Barton shaking fourdrinier with a 70 ft. wire, a plain couch and a new calender stack were installed, and No. 1 machine went back to making paper. With the new wet end, the machine was now rated 142". This incident is covered in some detail as being of interest in connection with later cylinder and calender dryer experiments and of modern developments in cylinder forming.

With the recent good showing of the mill in mind, money was being made available for other improvements. The Hammel oil burners were taken out and replaced with B. P. Lientz equipment; a fifth Babcock & Wilcox boiler was installed, and a concrete log sluice was built in the masonry dam, all in 1922. In 1923, four Dilts beaters were purchased to replace old equipment. The following year a Warren winder and a Rice & Sargent steam engine were provided for No. 1 machine and a Trimbeystock proportioning system, serving both machines, was added.

While this was going on, the conclusion had been reached that the use of the old canal for increased water power was impractical, and decision had been made to redevelop the power on the Anson side of the river. Accordingly, between 1922 and 1924 an entirely new hydro-electric station was constructed. The

old masonry dam was cut off short of the Anson shore, and a new concrete section was built, angling still further downstream roughly parallel to the river bank, to provide more spillway and a forebay for the new power house. The crest of the dam was maintained at Elevation 99, with three feet of flashboards to Elevation 102. A small waste gate section, with three gates, was provided adjacent to the power house.

The Anson station was designed by Hardy Ferguson, and was thoroughly modern for the time. The building was of steel and brick, on concrete foundations to ledge. There was some difficulty about obtaining good material for concrete. Fine aggregates were taken from a local pit, but stone taken from the excavation and crushed was found to be unsuitable. Some field stone was used, but the bulk of the stone aggregate was finally taken from a sandstone formation a short distance below the site, several crushers being set up at this point. The Foundation Company was general contractor, and Elmer Prouty, of the Engineering Department, was the Company's resident engineer. The power house, as built, was arranged for five generating units. Each consisted of a 1,500 horsepower, 150 R.P.M. fixed blade I.P. Morris turbine, in an involute concrete scroll case, over a concrete Moody draft tube with hydrocone, designed to operate at 22.5 feet head, direct connected to a General Electric 1,200 K.W., 2,300 volt 3 phase, 40 cycle generator. This would have been an opportune time to change the mill over to 60 cycle current, which by this time had become standard, but the argument against it was no doubt the expense of converting the mill motors. It is not known why low speed, low voltage equipment was chosen. Two of the generators were self-excited, and two separate motor-driven exciter sets and a

battery station were also provided. Four units, Nos. 1,2,3, and 4, were in place when the station was started up in 1924, and the speed ring and draft tube for No. 5 had been built in. Transmission lines were strung across the river directly from the power house to the mill grinder room. An indoor transformer station at the mill end supplied 550 volt power to the mill distribution system. The cost of this job was approximately \$1,200,000.

At the same time, all the old water wheels except the Allis-Chalmers unit and the old grinders were removed and the grinder room was entirely rebuilt, this job also being done by the Foundation Company. The height of the superstructure was increased, and four Warren continuous four-foot, chain-fed, high magazine grinders, with capacity of about 20 tons per 24 hours each, were installed. These grinders, were similar in principle to the European Voith equipment, but differed in some respects. They were built by Bath Iron Works, of Bath, Maine. This was the first commercial installation of four-foot grinders by the Great Northern Paper Company, and the second, perhaps the last, installation of this type of grinder in the United States. They were still in operation when the mill was sold thirty years later, but never quite came up to production expectations and always gave some mechanical trouble, particularly chain breakage, although they were easy on power as compared with other types. Each grinder was driven by a direct connected 1,200 horsepower General Electric synchronous motor, operating at 2,300 volts, so that there were no transformers between the motors and the generators in the Anson station. Their nominal speed was 300 R.P.M., actually about 240 R.P.M. The heightened building provided for a wood loft over the grinders, and the wood room conveyor system was modified to feed this storage. Five two-man Crouse rossers were installed on the

second floor of the wood room at this time, replacing the old knife barkers. Changes were also made in the groundwood screening system, and a steel tank was erected on the river side of the mill, just west of the sulphite screen room, so that groundwood could be made for a longer period on Sunday and stored there.

There does not seem to be any record of it, but along about this time a rock-filled timber crib bulkhead, faced with plank sheeting, was completed along the entire river bank from the filter house to below the finishing room, and a level yard was graded out to this, covering up the unsightly rockpile which had been the river-bank. This work may have been started some years before, perhaps as early as 1915, as has been noted. The new groundwood mill was in full operation in 1924, and concurrently No. 2 machine was shifted from bag paper back to newsprint.

In 1924, a new house was built on Old Point Avenue for the Superintendent, Ingleton Schenck, to, it is understood, his wife's specifications. The architect was Donald DesGranges, of Boston, and the house cost \$34,350, which was a lot of money for the Company to spend for such a purpose at that time. The land, and another lot on the other side of Old Point Avenue was bought from Jared Jones, et al. As part of the transaction the Jones house on the property was traded for the old Superintendent's house on Heald Street.

The fifth generator unit at the Anson station went on the line in 1925. When this was being installed, it was found that the speed ring and hydrocone built into the foundation were not on the same center. This condition was dismissed as an error in construction. Corrections were made and the installation was

completed. Shortly afterward, cracks began to appear in the floors, and between the floors and the walls at the up-river end of the building.

With increased production and rising power load, this re-development did not cure the power shortage. In fact, while No. 5 generator unit was going in, a 1,200 horsepower General Electric synchronous motor was installed in tandem with the 40 cycle motor on No. 4 grinder, and was connected with the Central Maine Power Company's system, through transformers, so that this grinder could be driven by purchased power. At this time there was in existence the Madison Village Corporation, a municipal enterprise which among other things operated a small power station and was franchised to supply power in certain parts of the Town of Madison, including that area in which the mill was located. On the strength of the obvious fact that the Village Corporation could not possibly supply this amount of energy, the Central Maine Power Company contracted directly with Great Northern for 1,200 horsepower, with a 70% demand provision on a monthly basis, at a rate of eleven mills, and so notified the Village Corporation. The latter, however, would have none of this, and insisted upon a three-way contract, under which the Central Maine Power Company paid it \$2,500 a year for the privilege of selling power to Great Northern. This contract was made in November, 1924, effective March 1, 1925. At some later date, the three-cornered deal seems to have disappeared, and for a considerable period Central Maine and Great Northern worked under a gentlemen's agreement whereby the one furnished the power if it had it, and the other used the power if it needed it, with no demand requirement and a variable rate.

Still later, probably in the 1940's, a contract relationship was resumed. The Madison Village Corporation was dissolved in 1947.

At this same time, the Company entered into an agreement with Hollingsworth & Whitney Company, the Central Maine Power Company and the Lockwood Company, creating the "Brassua Associates" for the purpose of building a storage dam at Brassua Lake on the Moose River, which flows into Moosehead Lake. No special legislation was required, as it was proposed to build under the old Mill Act, which had been amended about 1881 to cover storage as well as power dams, provided that the owner of the former was also the owner of the latter. This was the reason for an association of the proprietors of the several developed powers on the Kennebec, rather than a new corporation. The cost of construction and maintenance was proportioned in accordance with the total head which each company had developed for power. Great Northern Paper Company and Central Maine Power Company between them assumed the proportion of total head represented by the International Paper Company's development at Solon, this company not participating in the venture. The new dam, an Amburson type hollow concrete structure, was built by the Aberthaw Company and completed in 1927, adding 8.5 billion cubic feet to the capacity of the storage system. Under the agreement, proportionate ownership changed from time to time in subsequent years, Central Maine Power Company becoming by far the largest owner with the construction of its Wyman Dam and power station at Bingham. Incidentally, the Wyman dam flowed out an undeveloped power owned by Great Northern at Caratunk, which had been acquired with a purchase of land, and after con-

siderable negotiation the Company received \$40,000 for this.

This might be as good a time as any to discuss briefly the control of water on the Kennebec River, where the situation was quite different from that on the West Branch of the Penobscot, where for all practical purposes, the Company had full control. The formation of the Kennbec Water Power Company, in 1893, has been noted, and the Great Northern Paper Company of course became associated with this through the purchase of the Madison mill. This company, from the beginning, had no income, and by this time the various companies were being assessed on a formula basis each year for expenses and capital expenditures.

The watershed of the Kennebec River above Madison has an area of about 3,200 square miles, nearly twice that of the West Branch at Millinocket. However, very little of this watershed is tributary to the principal storage reservoir, Moosehead Lake, which has maximum storage capacity of 23.7 billion cubic feet. The largest tributary stream, the Dead River, enters the Kennebec below Moosehead, and for fifty years after Great Northern began operations at Madison there was no effective storage on this part of the watershed. There were of course dams at the two outlets of Moosehead Lake at a very early date. Both of them were originally timber crib dams, and remained so for a very long time, subject to constant deterioration and repair. The West Outlet dam was replaced in concrete in 1949. The East Outlet dam was replaced by degrees over a period of years, and was not entirely a concrete structure until 1958.

On the streams running into the main Kennebec River below the mouth of the Dead River there was no storage of consequence,

most of the many small driving dams on these streams falling gradually into disuse. The Moxie Dam Company, controlled by the Great Northern Paper Company, did maintain a dam at the outlet of Moxie Lake, which provided a small reservoir, and there were a few other minor storages. The other larger tributaries, Austin Stream and the Carrabassett River, were for practical purposes uncontrolled.

The Kennebec Water Power Company employed a Hydraulic Engineer, who handled the flow of water from all available storage, Madison being the control point. The Hydraulic Engineer issued regular bulletins covering current conditions and forecasting controlled flow, by which the different users were governed. This arrangement worked very well. There was an occasional difference of opinion, when one company or another, because of its situation at the time was hard pressed to keep up with its power requirements, but the control was impartial and intelligent.

The need for storage on the Dead River was recognized early by the Kennebec interests, but it was a long time before it materialized. The logical site, at Long Falls in T.3 R.4 involved some of the small amount of land and undeveloped water power still owned by the State, and the legislation creating the Kennebec Reservoir Company, became part of the history of the bitter struggle between private interests and those advocating State control of the rivers, water power and natural resources which raged from 1913 up into the 1920's. This will be more fully discussed in another chapter.

The original legislation was introduced in 1923 and easily

passed both houses, but was vetoed by Governor Percival P. Baxter, the champion of State control, with a message in which he compared the bill to the great "land steal" of 1868, referring to the giving of large tracts of land to the European & North American Railroad, which has previously been noted. Debate on the veto was hot, but the bill was passed over the veto. Gov. Baxter then went to the public with a series of proclamations denouncing the legislation and calling for a referendum. He personally appeared before the legislature, calling for repeal of the act and offering a new bill of his own, which provided that the land involved might be leased to the Kennebec Reservoir Company for 40 years, after which the State could take it by payment of not more than one-half the cost of the improvements. He indicated that the Central Maine Power Company, the principal interest behind the Kennebec Reservoir Company, was willing to accept his revision, but did this in such a way that it angered the Central Maine people and embittered the stormy debate which followed. However, the original act was repealed, and the Governor's substitute was passed. Not content with this, he went to the people again with another round of proclamations justifying his position; extolling the victory over private interests; excoriating the "power lobby", naming practically every user of water on any large river in the state, and blasting the Presidents of the companies on the Kennebec, including Garret Schenck, as the instigators of the evil scheme. In the next two years, he continued to press for a constitutional amendment which would give the state control over its water power resources, and his farewell address to the Legislature in January, 1925, was largely devoted to the condemnation of private power and timberland interests, with special attention to the Great Northern

Paper Company. However, in spite of all this, the next legislature, meeting in 1927, quietly passed a new Kennebec Reservoir Company Act, (Chapter 113 of the Private and Special Laws, 1927,) leasing the land for fifty years, with provision for release to the owners or retaking and payment at the end of that time.(6) This act was extended and amended in 1929, 1931, 1933, 1935, 1937, and 1939.

It was more than twenty-five years after the original legislation that positive action was taken. Many studies were made by the Central Maine Power Company not only of storage but of power developments, including one scheme in which water from the Dead River would have been pumped up into Pierce Pond, from which it would have been discharged through penstocks and turbines to the Kennebec. However, the storage development was decided upon, and in 1949, an agreement was made between the principal users of water for power at that time; Central Maine Power Company, Hollingsworth & Whitney Company, Great Northern, Lockwood-Dutchess, Inc. and the Bates Manufacturing Company, under which Central Maine Power Company would build the dam, control of the additional storage, with certain restrictions, being turned over to the Engineer of the Kennebec Water Power Company. The Great Northern Paper Company contributed \$100,000 to the cost of the construction, in consideration of the value of the storage, waiving any interest in the physical property. The reservoir dam, flowing out Flagstaff Pond and the Dead River up to the town of Stratton, completed in 1950 was capable of impounding 12.0 billion cubic feet of water.

Getting back to the mill, in 1925 and 1926 the two-man Crouse

rossers which had been located in the wood room two years before were taken out and ten one-man rossers were substituted, in two steps. Another outdoor steel groundwood storage tank was added in 1926, so that a 24-hour Sunday run of pulp could be stored. In this year also, a concrete conveyor, below grade, called the "tunnel", was built under the wood piling ground for reclaiming wood from the pile to the wood room. New Cameron winders were also installed on both paper machines, as part of a Company-wide winder replacement program. The following year, a new timber crib was built along the east side of the canal, from the wood room to the Main Street bridge, and the yard and piling ground were filled out to it, narrowing the canal on that side. In 1927 and 1928, the barking drum was removed from the lower floor of the wood room building, and was relocated outdoors, between the east side of the canal and the wood room, with the necessary conveyors. This installation was made on fill, much of which was bark, and in later years a good deal of trouble was experienced with the operation of the drum, due to settling of the foundations. At this time also the wooden floors which still remained in the beater room and on the blowpit floor level in the sulphite mill were replaced in concrete. In March, 1928, the roof of a little brick building right alongside the railroad track just north of the grist mill used for storage, caved in. The Superintendent, fearing that he would be criticized for not keeping his property in shape, was all shook up about this, but it was a blessing in disguise. With the wreckage of the roof removed, this building made a handy little pocket for the storage of limerock, and was so used thereafter.

Between August and November, 1928, the height of the flashboards on the dam was increased to five feet, raising the pond to

El. 104. This was first done in a temporary way by splicing onto the top of the old boards and propping up the whole business with long poles wedged into the stream bed below the dam. Later, a drill rig was mounted on the dam, holes were drilled for larger pins, and new flashboard panels were installed. This could be done, since the Indian Spring mill was shut down and the canal, not being used for power purposes by anyone, could be held at a lower level than the pond, to comply with the 1909 agreement with the Madison Woolen Company.

For some reason, the Kennebec River at Madison was prone to make anchor ice, and shut-down at the Anson Power house were frequent from this cause under certain temperature and wind conditions. On November 26, 1928, ice began to build very fast on the racks at Anson, cutting off the flow of water through the wheels and raising the level of the pond suddenly. With about a foot of water going over the boards, all the pins bent, a short section of boards went off, dropping the head, and the situation seemed to be in hand. Whether the cause was the short period of high head, the changed angle of the pins, or the pounding of the heavy drill was never determined, but at any rate, on December 13th the old masonry section of the dam between the log sluice and the Madison side went out. No damage was caused downstream, as the pond did not hold much water, but the mill was of course shut down.

As the water level in the pond dropped, the ancient wooden dam was uncovered. This was patched up by Jim Sargent and Lonnie Mann and a crew of expert dam-builders rushed to Madison by the Spruce Wood Department. Plugs were put in between this old dam and the remains of the masonry structure, and in four days the

head was restored to a level which allowed the mill to get back into production.

The old masonry was examined by Hardy Ferguson and Frank Bowler, the latter reporting...."The wrecked portion of the dam.... was unwatered and inspected by your Engineer and Hardy S. Ferguson, Consulting Engineer, who found the mortar in the old masonry could be removed with the bare hands and readily crushed in the hand, showing little more cohesion or adhesion than wet sand. This mortar was apparently made with Rosendale cement and had failed to harden or set." As the old crib dam was leaking badly, a coffer-dam was built behind it, and what remained of the old masonry was removed to ledge, and a new concrete dam was built from the Madison Woolen Company's abutment to the log sluice. The remaining short section of masonry, from the log sluice westward to the 1924 construction was reinforced, capped and faced with concrete, and the five-foot flashboards were put back in place. All of this work was completed by April 1929. An examination of the old canal head-gate section showed that this was also deteriorated, some of the stones having moved, and this was similarly repaired, starting later in the year and finishing in 1930. At this time, all but three of the old deep gate openings in this section were filled with concrete.

Up until 1929, all of the Company's mill operation was on the east side of the old canal, the property on the other side, the "island", being occupied by the Indian Spring Woolen Company, at this time owned by the American Woolen Company and idle for several years. This property was purchased by the Company in 1929, primarily for the power rights. The Indian Spring mill was a four-

story and basement brick building, with a wooden addition on the down-river end, containing the wheel-house. This structure was located right on the bank on the river side of the island, with a small yard between it and the canal, with an entrance from Main Street. During the next two years, the wooden section was torn down and the wheel-pit was filled; the brick building was made into a storehouse for cores and other supplies; a crib-work was built along the west side of the canal and filled, leaving only a narrow water passage, and a new steel and concrete bridge, replacing a previous light structure, was built across the canal near the wood room to connect the two properties. The canal was now used only for floating wood to the barking drums, for the supply of process water, and for water for the fire protection system.

A small separated brick building, the wool scouring house of the Indian Spring plant, lying in the angle between the west side of the canal and Main Street was made into an office and time office for the mill. This little building was the first Company mill structure to be located on the main travelled way of any town, and at the direction of William A. Whitcomb, who was President at that time, the name of the Company, in bronze letters of a style which he personally selected, was spread across the front of it. This is the first time, as far as is known, that the name of the Company was used in this manner. The upper floor of the building was used for the storage of office records, and became a repository for, among other things, the transfer files from the Boston office. It would have been much easier to write this story if it had not been so used, as will be explained later.

At about this point, it began to be apparent that the mill was slipping into trouble. The price of newsprint had been falling since 1921, and was still heading downward. By 1928, while paper production was up to 30,000 tons, mill earnings had fallen to about \$160,000. Sulphite pulp sales had dropped to less than 2,000 tons per year. Mitscherlich pulp had declined in popularity, and was produced at this time by only a very few mills. It had some advantages, particularly for the making of glassine and parchment, and there were one or two mills willing to pay a small premium for it. However, the old cast iron piping system, the unfortunate location of the fresh water intake relative to the barking drums, the increasing amount of fir in the pulpwood supply and the inadequacies of the screening system prevented the mill from making pulp clean enough for this market.

Earnings from 1924 through 1927 had averaged less than \$250,000 per year, lower than for the four previous years. The large amount of money spent a few years before on No. 1 paper machine, the Anson power development and the new grinder room had not paid off. It had represented an inordinately large percentage of the Company's total expenditure for capital improvements during the period, and had inhibited other work which was badly needed. A sort of frustration about the Madison mill began to be felt, and the failure of the dam late in 1928 was a sort of psychological last straw.

At this time, some motions were made toward selling the mill, but they were half-hearted, and nothing came of them. In 1928, the new position of Assistant Manager of Manufacture was established in the executive organization at Boston, one of the major duties

of this new job being to give special attention to the Madison operation. There was much study as to what might be done to improve matters, without any very definite conclusion.

By 1929, with both machines still on newsprint, the books showed that for the first time Madison was running in the red at the rate of around \$200,000 per year, and action of some kind became imperative. It seemed obvious that No. 2 machine, on which no important improvements had been made since it was installed in 1899, was no longer able to make newsprint competitively, and with a heavy program of work in prospect at the larger mills, there was no possibility of a rebuild or replacement. Besides, there was not power enough to support any substantial increase in newsprint production.

The thinking on the problem was narrowed not only by the faint enthusiasm of the Directors for spending any more important money at Madison, but by the Company's lack of experience and connections anywhere but in the newsprint and coarse paper markets. The excess capacity of the sulphite mill pointed toward the production of paper which could be made from this pulp, but without bleaching facilities the field was limited to wrapping, bag and similar papers, which had by this time largely been taken over by kraft pulp. There was a study of the possibility of making glassine, a popular and profitable grade at that time, but this foundered on the old obstacle of shortage of power for the necessary prolonged beating.

Eventually, the thought emerged that kraft paper had not yet been entirely accepted for use in the "market" papers, used

for meat and food wrapping, and a decision was made to go in this direction, using the old gambit of sulphite papers on No. 2 machine and newsprint on No. 1. Out of this decision and these factors grew a program of piecemeal conversion, and while a lot of money was spent, and a lot of work was done over the next 25 years, the policy resulted in many "too little, too late" situations and little outstanding success. The mill did have some very good years later on, but these were partly due to abnormal conditions in the industry, and the problem was never really solved.

In 1929, a Millspaugh type suction couch and suction first press were installed on No. 1 machine, to increase its capacity on newsprint. The press was one which had been removed from one of the Millinocket machines. At the same time, the beaters for No. 2 machine were overhauled, and ten flat screens built by Glens Falls Machine Works and a jordan were provided for sulphite. A smoothing press, together with a second calender stack, fitted with water boxes, was installed on No. 2 machine for the production of water finish papers. An 84" cutter and layboy and an 84" press cutter were installed in the finishing room, and production of sulphite "specialties" was started on No. 2 machine in the late summer. From this time on, the greater part of the output of this machine was shipped as sheets, flat or folded, or as "pony" and "counter" rolls. The sheet shipments involved the making of wooden skids, frames and, later on, pallets, and this went on for the next twenty-five years.

Along with this change, efforts were made to increase the sales of sulphite pulp. Not being able to remove the dirt particles in any other way, the mill made an attempt to bleach them

out. Washing drums were added to the beaters, and a makeshift system for mixing chlorine bleach, with some storage tanks, was provided. The result was almost comical. It was found that it was possible to bleach a small amount of pulp, after a fashion, but the washing was inadequate and the bits of iron rust, scale and bark refused to turn white. This bleaching effort was abandoned.

The sulphite pulp, while acceptable in the small proportion required for newsprint, was also found to be too dirty for the new market papers which the mill was trying to make. Therefore, later in the year, a sawdust screen was added to the wood room chip system; a riffler was built along the east wall of the sulphite screen room; ten flat screens were added; some of the old iron pipe in the system was removed and replaced with wood lined pipe and a small amount of copper, and a third Bird screen was provided for No. 2 machine. A tiny laboratory, equipped with rudimentary testing equipment, was built in the overhead passageway between the beater room and the acid plant -- at a cost of \$1,008! With these changes, it was possible to produce salable sulphite grades. Forecasting the situation which was to prevail for many years, No. 2 machine made, in the last quarter of 1929, dry finish white and manilla wrapping paper, various colored water finish wrapping papers, sulphite parchment cut for use as "slap sheets" in meat markets; imitation parchment, containing some groundwood, for the same use; white bag paper with a watermarked stripe produced by using a second felt with a regularly spaced heavy warp thread; waxing paper and twisting paper, all of this amounting to a total of only some 2,000 tons.

While the Madison mill had been receiving a percentage of

dry sap peeled wood, the program of making sulphite specialties on No. 2 machine called for putting the sulphite mill entirely on this grade of wood. Primarily, this was intended to produce cleaner pulp, but the thinking at that time was also that better acid penetration could be obtained with dry chips and that this would improve yield and quality. The additional supply of peeled wood was purchased along the lines of the Maine Central and Canadian Pacific for rail delivery.

This is not the place to go into details on the Madison wood supply, but some general information may be in order. In the early days, most of the supply was in the form of long logs, river driven, and when short wood came into general use, the supply continued to be partly rough river driven wood. The early practice of putting Great Northern wood into the Kennebec Log Driving Company's drive, along with that of other owners, meant a sorting operation at Madison. To eliminate this, and perhaps for other reasons not now known, the Company had decided, some time before this point in the story, to bring down its own wood, following behind the K.L.D. drive. One of the results was frequent late delivery and an occasional hung drive due to low water.

As it was not safe to hold any amount of wood in the mill pond during a large part of the year, the drive was held behind Hilton and Weston Islands at North Anson, and was let down a little at a time as needed for use and piling. The effort was never to have any wood in the water over winter or to have any in the holding ground when high water might normally be expected. This did happen once in a while, though, and around this time new piers were built and new booms put in at the holding ground by the Spruce

Wood Department. while in several subsequent flood periods Weston Island was entirely under water, no great amount of pulpwood was ever lost. It was also hazardous to let any wood from the holding ground down into the mill boom early in the spring. This had to be done on occasion when the pile ran short, and some wood went under the booms from time to time, but again no large amount was lost.

Mention has been made of the piling ground above the railroad bridge. This was used in the long log days as an overflow when the mill yard pile was full and it was necessary to get the logs out of the water. Short wood was piled from the river at this location, when necessary, by using temporary conveyors. A fire occurred here in 1928, but caused little loss, being quickly controlled by blowing the pile with dynamite.

The procurement of larger amounts of peeled wood was intended in the beginning for the improvement of pulp quality, but it also had the advantage of reducing the size of the river drive. This consideration, together with the depression conditions which developed shortly, encouraged the expansion of railroad wood purchases for the Madison mill, and as equipment and woods roads improved, more wood began to be delivered by truck, and the river drive decreased accordingly. Purchases for overland delivery were entirely peeled wood at this time, in order to keep freight cost at a minimum, and peeled wood was available up to about 1940. During the war years, however, it became very difficult to get wood peeled, and moves which will be discussed later had to be made to take care of rail shipments of rough wood.

In 1930, a new alum and size system was installed; the four

Dilts beaters were rebuilt for so-called high speed operation; two more flat screens were added to the sulphite screening system; a third Bird screen was provided for No. 1 machine, and a small Haug refiner, which had been in use as an experimental unit at East Millinocket, was shipped to Madison for use on groundwood Screenings. These moves were all in the direction of improved quality. In this year also, the old wooden pulpwood stacker was removed and replaced by a steel one. This job was distinguished by the fact that the whole structure, when nearly completed, was caught in a heavy windstorm and blown down, with little damage except to the ego of the Engineering Department. In this year, in spite of low water conditions early in the season, the mill made 29,700 tons of paper, but a profit of only \$32,000.

The following year, 1931, in an effort to further clean up the No. 2 sheet, a battery of six Tolhurst Centrifugals was installed at the wet end of the machine. The Tolhurst was a sort of overgrown washing machine spin dryer, with the basket suspended from the floor above on a long shaft. It had recognized shortcomings, but was chosen over more suitable equipment on the basis of price. This installation did remove some dirt, but required constant attention, the baskets having to be shut down in rotation at frequent intervals to remove the mat of rejections which formed inside. It was not very successful, and was in use only a relatively short time.

In 1931, the effects of the depression were being felt. Sulphite market pulp sales, small anyway, went down to zero. The price of newsprint fell to \$57.00 a ton, \$5.00 below the previous year. The Sales Department, hard pressed to find news-

print business for the Millinocket and East Millinocket mills, where production had dropped about 12% due to lack of orders, had begun to try to fill up No. 1 machine at Madison with colored newsprint and the "novel news" used by the pulp magazines. As much of this business was for paper in sheets, a second-hand 112" cutter and layboy was purchased for the finishing room. This year the mill struggled through with a loss of \$13,000, making newsprint and a few groundwood printing grades on No. 1 machine, and more or less the same kinds of sulphite papers as the year before on No. 2 machine, plus some really beautiful colored light-weight mottled water finish wrapping papers, which were pretty but unprofitable. The poor showing was not entirely due to business conditions, as it was a low water year, with all storage entirely empty from early in February until the first week in April. A new highway bridge across the canal was built in this year. (7)

There were no broke beaters under the machines at this time, and the dry broke from the highly sized and colored papers from No. 2 machine began to be a problem, since it could not be worked back into the system fast enough in the beaters used for the preparation of stock. Funds not being available for a conventional broke beater installation, an old Dilts beater was salvaged, repaired, wedged in between the foundation piers under the stacks of No. 2 machine, and served very well.

On January 1, 1932, the price of newsprint was down to \$53.00 and weakening; a rather severe flood was experienced in April, and by the first of July the Madison mill was out of the newsprint business, winding up the year with a loss of \$200,000. In the depression period which followed, the Sales Department took orders

for anything which the mill had any hope of making. Some of this business took hold and developed into substantial volume in later years. As time went on, conditions in the industry, the limitations of the equipment, and sometimes both, made it necessary for the sales force to turn in whatever direction there seemed to be business that the mill could take, following up all kinds of leads and suggestions, and a bewildering assortment of papers was produced. Some of these turned out to be profitable, some fell to competition, some continued to be produced and sold just to keep the machines going and some were utter disasters. It was the clear policy of the management to keep the mill in operation and the people employed, and in this it was successful, but a disproportionate amount of time and effort was expended by the Sales Department and the executive organization in so doing.

For the next twenty years, it is impossible to document the evolution of the grades of paper made at the mill or to accurately relate specific conditions and incidents to their production. Sales records for the period have been largely destroyed. Official records of cost were kept only by machine, rather than by Grade, for the reason that except over extended periods of time there was little relationship between cost and sales, a dozen kinds of paper being made on the machines while another dozen kinds were being processed and shipped. For some measure of control, grade costs were kept after a fashion by the mill office. Because of the differences in lengths of runs, frequent order and color changes on the machines, wide fluctuations in cost caused by high water, low water and dizzy variations in production, they were approximations, useful for estimating and as records of stock formulae. They were transient records, and are gone, as are the "Weekly

News Letters" the official log of operations. The writer has therefore had to rely upon his memory and that of others for this aspect of the story.

In spite of depression conditions, orders for No. 1 machine were expanded to include waybill manilla, telegraph blank paper and poster papers, without too much difficulty. It was soon found, however, that the machine could not meet competition for quality in these new grades. As a start toward correcting this condition, an Emerson jordan was installed ahead of the machine to brush out broke flakes; a new Rice Barton adjustable shaking foudrinier was provided, the shake being driven through an old experimental head sent over from Millinocket, and the old machine chest, a prolific dirt-maker, was replaced with a new figure-eight type steel chest. This work was done in 1932.

Most of the papers being made on both machines were now colored, and there were a great many sheet orders. One reason for this was that this was the least desirable business for some of the other mills which had been longer in the field and therefore was the easiest to get into at Madison. This situation posed another broke problem, as much of the time the machines were making one color, while trimmings from half a dozen other colors were accumulating in the finishing room. While some of the colors could be and were separated and baled, to be used in some future run, this could not be done all the time, and there was always a large quantity of mixed baled dry broke on hand. Frequent color and grade changes also resulted in tag-ends of slush stock left in the system. Whenever possible, this was taken off on a wet machine and stored in laps for future use. A partial solution was

found by making a low-grade water finish wrapping paper, brown in color, from a mixture of sulphite pulp, sulphite screenings and colored broke. A Dilts beater-type pulper was installed in the beater room in 1932 to re-pulp dry broke for this purpose, and as long as the sheet could be sold, the problem was not too troublesome. Later on, it became a real headache.

As the tonnage of specialty papers increased, it was necessary to put in still more sheeting equipment, and in 1933, although the finishing room was already crowded, a 70" Dillon rotary cutter in use at East Millinocket was shipped over to Madison and a 74" Seybold press cutter was bought second hand. Dry end broke from No. 1 machine began to be an increasing problem, and at this time a new Shartle broke beater was bought for that machine in order to get continuous return of broke to the system. As the papers began to demand better control of sizing, new dry size and alum systems were installed in the acid plant building. The acid maker, who was not overburdened with work in a plant of this capacity, took over the duties of preparing the size and alum solutions, which were pumped to the beater room.

With the intense competition of this period, lack of quality control and the continued presence of too much dirt in the sheet, in spite of the moves that had been made, began to hurt. In 1934 and 1935 a new smoothing press was installed on No. 2 machine, two Bird slotted plate screens were added as first screens on sulphite, the sulphite chest was fitted with a circulating agitator pump, and propellor units, intended to increase capacity and effectiveness, were added to the Dilts beaters. Dirt frozen on the wood coming from the pile during the winter months was another troublemaker.

An effort was made to help this situation by using white water in the rosser tank in the wood room ahead of the chipper and the grinders, and by mounting a series of rotating wire brushes over the tank. Neither move was very productive. At this time also, a 92" Langston winder was purchased to make small rolls of teletype paper from the product of No. 1 paper machine.

Time began to catch up with the old steam plant, and a program of renewal was inaugurated in 1935 with the replacement of the old Nos. 4 and 5 boilers with one 495 h.p. Babcock & Wilcox cross drum unit.

At an earlier point in the story, the misalignment of No. 5 unit in the Anson generating station was mentioned. It had become evident that something more than an error in construction was involved. Cracks had developed in the substructure walls at the north end of the station, as well as in the upper walls and floors, and it began to appear that the other units were also out of line, those at the north end of the station being the worst. Nos. 4 and 5, the upriver wheels, were unwatered and the foundations were investigated, but no conditions could be found that would account for the cracking of the concrete and the movement in the generating units. These were then dismantled, one at a time, by I.P. Morris and General Electric people, and were lined up. Some cavitation in the runners of the wheels was filled by stainless steel welding, the first use of this technique in the repair of the Company's power generating equipment. It had been observed that the cracks did not gradually get wider, but opened and closed with a variable range. Walter Handley, who was then Master Mechanic, had a micrometer permanently set so that variation in the width of the crack

between the north wall and the floor could be accurately measured. Readings were taken daily and reported to the Engineering Department at Millinocket in a monthly summary. This practice was continued right up to the time of the sale of the mill, and there will be further comment on this interesting situation later.

Work on the water wheels was interrupted in March, 1936, by the worst flood in the history of the Kennebec River. There had been other floods, notably the one in 1901 when the river reached Elevation 113.5, or $14\frac{1}{2}$ feet over the crest of the dam; one in April, 1923, when it reached exactly the same height and one in September, 1932, when there was about 8 feet of water over the dam, putting several feet of water into the basement, and wetting all the motors there. During this 1932 flood, there was wood in the river, and a boom of several hundred cords just above the canal headgates broke and was lost. Other booms in the main holding ground held, although the piers were under water. The 1936 flood again put $14\frac{1}{2}$ feet of water over the dam, and perhaps did less damage to equipment than some of the previous floods. It was more spectacular, however, due to the heavy ice coming down the river at the time, and may be worth a description.

On March 13th, the river was considered to be at flood stage, with a flow of some 46,000 c.f.s. at Madison as compared with the normal 3,000 to 4,000 c.f.s. On the 16th, it began to drop, but further heavy rain gave warning that worse was coming, and the mill began to make preparations. Dryer canvas was hung on the security fence between Main Street and the wood pile, which still had a lot of the winter's wood left in it. The canvas was anchored with heavy stones, and the fence itself was tied down with

wire cable. The mill was shut down, and nearly all of the motors in the mill basement had been lifted and blocked up or hung from chain falls. The basement windows and the office door had been sandbagged. At 10 A.M. on March 19th the river rose suddenly, and water began to run through the Madison Woolen Company's buildings. An hour later, a jam of ice came down on these buildings, and on the headgates, forcing the water around the Woolen Company's main building and down Water Street onto Main Street. By one o'clock, it was up around the Company's office. In the early afternoon, the Madison Woolen Company's yard washed out, their office building was torn from its foundations, which were demolished. Some time during the day, the official estimate of flow was 105,890 c.f.s. Heavy ice ran all night, and the river reached its peak about midnight, when the flow was unofficially estimated at 112,000 c.f.s. Early on the morning of March 20th, great cakes of ice came down Water Street and across Main Street, lodging against the mill yard fence and forcing more of the flow into the driveway between the Company's office and the Indian Spring building. This driveway was quickly washed out, and the underground piping to the Indian Spring mill was carried away. At the same time, a mass of ice and debris forced itself under the highway bridge across the canal, tearing loose the boom logs in the canal, and the whole mass jammed on the little bridge near the barking drums, diverting water into the yard in the area of the wood pile.

An attempt to dynamite the masonry wall of the canal on the afternoon of the 19th had been unsuccessful, but explosives were now used around this bridge, clearing out part of the jam. However, it still diverted water against the wood pile and down along

the east side of the mill and into the basement windows, which did not make much difference, as the basement was already flooded by backwater from the river below the dam, now only a trifle lower than the pond. Water in the engine room was 41 inches deep -- about one foot above the crankshaft on No. 1 engine. Two thicknesses of wire fencing were hurriedly strung around the base of the wood pile and tied down with wire cable, and a sandbag dyke was built from the foot of the pile toward the wood room to reduce the draft of water around the pile. These moves prevented any serious loss of wood, only a few cords working out of the pile and down the river.

Through March 20th, the river dropped slowly. On the morning of the 21st, the work of cleaning up was started. The motors which had been hung up in the basement were put back in place, and preparations were made to begin operations again. While this was being done, there was more heavy rain, the river began to rise once more, and it was necessary to take up all the motors a second time. After this, the river receded, and production was resumed a few days later. Damage was estimated at about \$34,000.

Neither the highway bridge nor the Maine Central Railway bridge were damaged by this flood. Later in the year, a dyke was built from the embankment which approaches the railroad bridge on the Madison side to the canal headgates, to an elevation above the highest level recorded at the bridge in the spring flood, and the underpass through the railroad embankment was modified so that it could be closed up with stop-logs in times of high water. This work was done by H. J. Deutschbein Company, the cost being divided in equal shares between the Company, the Madison Woolen Company and

and the Town of Madison. At the same time, the Company raised the height of the gate section to correspond with that of the dyke. In later flood periods this construction effectively prevented water from the river above the mill coming into the mill yard. A lawsuit, based on the contention that the existence of the dam substantially increased the elevation of the river above it during the flood was decided in favor of the Company.

Up to this time, wood from the river was being floated down the canal to the barking drums. This required the use of considerable labor, a substantial draft of water, and frequent dredging of the canal. To eliminate these conditions, a sectional steel sluice, floating on integral steel pontoons was designed, built and installed in the canal, from the headgates to the barking drums, and worked very well.

Quality was still a problem, particularly in the groundwood grades being made on No. 1 machine. Some very good groundwood printing paper had been made by re-screening groundwood and using only first screen stock for special runs, but this threw more rejects into the other grades, and in 1936 the whole groundwood system was divided. Two of the grinders were separated from the others by a dam in the spout, two new bull screens were installed for these grinders and the fine screening system was divided. This was all right in principle, but much of the time there was not sufficient power available to make slow pulp, even on two grinders. At this time also the Sales Department turned up several pieces of business which called for watermarks in the sheet. This would have called for the purchase of several rather expensive dandy rolls, for an uncertain amount of production. To get around this, each machine

was fitted with a marking device built by Rice Barton -- a series of spring-loaded rollers, five or six inches wide, on which were mounted rubber sleeves bearing the required mark. These sleeves could be changed fairly readily. The No. 1 device worked on the first top dryer, and on No. 2 machine it was mounted on the second press. They were used off and on for a considerable period, with fair success, although they tended to cut the sheet. No. 1 machine was making a great variety of colors, changing every few hours. The open system on which the machine was still operating was the cause of a terrific loss of stock from wash-ups and color contamination through the white water, and in this year an Improved Paper Machinery Vacuum saveall was finally provided for this machine, reducing direct loss but having little effect on the overall colored broke problem.

From 1933 through 1936, the mill lost money; \$195,000 in 1933 and around \$50,000 in each of the other three years. With the Sales Department digging for every bit of business it could get, many of the orders received were very small, some for only a few hundred pounds of paper. This was one period, and there were others, when the backlog of orders for the machines, if there was any, was measured mostly in hours. Each morning the mill reported its situation to the Boston office, they in turn got in touch with the Sales office in New York, and usually before the end of the day, it was possible to put together enough business to keep the mill going until the next morning. At times one machine, sometimes both, were run without orders, just to keep the mill in operation. At these times, standards grades and sizes were made and put into storage, with the expectation that it would be sold eventually. It was normal to keep a small inventory for a few

staunch customers for the No. 2 machine papers, and time and again they kept the mill going in a pinch by advancing their orders. However, building inventory in the face of falling prices was a dangerous procedure, and it was necessary in several of these years to write down the value of the paper in stock, these adjustments not being included in the above earnings figures.

There are some records of the kinds of papers made during the next five or six years. No. 1 machine turned out Printing Manilla, Novel News, a canary-colored sheet called Railroad Writing, Waybill Manilla, light-weight catalog paper, hanging paper, canary groundwood paper for second sheets, known for some reason as Railroad Manilla, corrugating paper used in the manufacture of electric light bulb packages, some dry finish butcher's paper, teletype paper and poster papers in eleven colors. In one quarter of 1933, in addition to the other grades, the mill made 10 orders of blue poster, 27 of canary, 16 of green, 13 of orange, 6 of goldenrod, 5 of salmon, 17 of mandarin, 11 of lemon, 9 of pink, 9 of cherry and 1 of mustard, and these orders could seldom be accumulated, but were run about as received.

Color changes had to be made in rapid succession. Twelve to fifteen order changes in 24 hours, not necessarily all color changes, were common. While many of the colors were standardized, matching a customer's sample, sometimes a very tiny one, became a great game in this period, and small trial runs were frequent. In addition, the mill was making so-called "rainbow" papers; ground wood sheets of six different colors, collated on the rotary cutter so that the colors followed each other in order, one sheet of each. This paper was cut into 8½"x 11" sizes and packaged in reams, and

and was a colored broke nightmare.

No. 2 machine was even worse, making two grades of Manilla Butcher's Water Finish, Butcher's Pink Dry Finish, three grades of blue textile wrapping, white textile, green textile, groundwood school drawing paper, several colors of silk finish butcher's paper -- a high water finish sulphite sheet; shell paper in white and pink for dynamite cartridges, textile papers calender stained green, blue or buff on one side, box liner paper, including some "cheviot" and "cloud" made respectively by mixing previously colored fibres with white stock or white fibres with colored stock; bulking book; a water finish screenings sheet; two grades of imitation parchment; a polychrome hanging for embossing, made by dripping spots of color on the wet paper before it entered the dryers; a light-weight sheet for conversion into carbon paper, and Braille paper, made from screenings. During this period there was a lot of experimenting with wax size and wax emulsions added to the water boxes at the finish stack. This was in an effort, partly successful, to compete with the "blood-proof" papers made from semi-bleached kraft, which by this time had become important in the market paper field, and wax emulsions were used on the water finish papers for many years. A number of other grades were tried and abandoned.

Most of the papers made on No. 2 machine at this point were so-called sulphite grades, but a majority of them contained some groundwood. Wherever the color permitted, a proportion of dry broke was put into the furnish for these papers, which did not do the strength any good. When it was felt that the limit had been reached on the use of dry broke in this manner, it was put into

bales, which were stored in the finishing room, the basement, the beater room, and even outdoors, in hope that the material could eventually be worked back into the system.

In spite of the difficulties, the Sales Department and the mill organization managed to maintain a fairly high level of operation. Production averaged about 27,000 tons a year between 1932 and 1936, a little less than 90% of the previous maximum year. Only on occasion, born of dire necessity, was a machine shut down and then usually only for a day or part of a day. There were times when it might have been better to curtail and accumulate orders, but in these hard times the management chose to keep the people working, even though it did not make economic sense. Besides, with everyone buying hand to mouth and holding inventories as low as possible, almost every order was a "rush" order, and the machines were run to hold even the undesirable business. At least it was something.

Starting in 1934, it was found possible to sell a little sulphite pulp. This was marketed at a low price, but it helped to carry overhead, and the increased production in the pulp mill reduced stock cost slightly. About 1,500 tons per year were shipped in the three years ending in 1936.

By early 1937, there was the beginning of a short-lived boom in the paper industry. The price of most of the papers made at Madison began to stiffen a little and with wood cost and labor rates still low things began to look a little brighter. The average net selling price of the papers being made on No. 1 machine

in 1937 had got up to \$52.00 a ton -- about \$10.00 a ton more than newsprint. The average net price of the No. 2 papers in this year was \$71.00. Wood cost, which had reached a depression low of \$11.00 was up to \$13.00. This did not bring on any substantial program of improvements at Madison, as the Company was getting ready to start a new hydro-electric development on the Penobscot River. Another 495 h.p. Babcock & Wilcox boiler replaced the old Nos. 2 & 3 units in 1937, and the remaining old unit, No. 1, was replaced in 1940. In 1937 also an Improved Paper Machinery Company vacuum saveall was provided for No. 2 machine white-water, and a Sheehan carrier was put on the first eight dryers of No. 1 machine. This was extended to all the dryers two years later. In 1938, No. 2 machine was making paper for the old Postal Telegraph Company. This had to be treated with a sugar solution to reduce static and curl, and spray equipment was purchased for the purpose. Making this paper created an awful mess around the stack, but a large amount of it was produced successfully. In this year also, the river-bed under the northwest corner of the grinder room was excavated, and a concrete pier was built to ledge to support the foundation, which had been undermined by repeated high water.

Leakage of fuel oil from the old concrete tank began to find its way into the river in 1939, and something had to be done about that. This started out to be a problem, which was solved rather neatly, however, by spreading a layer of sand on the bottom of the concrete tank, and erecting thereon a new steel tank, projecting through a hole cut in the top of the old one, the walls of which served as dyke protection against spills or failure. In this year also, the wood piling conveyor was extended and raised to a height of 85 feet. Madison had to pile for a longer winter

period than the other mills, because it was not safe to carry wood over in the water at the mill holding ground, or to drive down into the mill boom until late spring. With wood double-tiered all around the pile, about 30,000 cords could be stored after this improvement.

In 1938, it had been announced that the Southland Paper Company had been formed to build a newsprint mill at Lufkin, Texas, as the result of Dr. Charles Herty's experiments with the grinding of southern pine. This mill started up in 1940. Controversy had been raging for some years as to whether newsprint could be made from southern pine, many of the northern companies, including Great Northern, contending that it was impossible. Even with the construction of this mill actually under way, there were some who still said that good newsprint could not be made from the southern wood. At this time, the Company decided that it had better find out what it was up against; purchased a carload of loblolly pine pulpwood, shipped it to Madison, ground it, and made it into newsprint of fair quality without much trouble. The paper was used by the Lewiston Sun-Journal, pretty much silencing the argument.

In 1937, the mill made a profit of \$151,000. The next two years, earnings practically vanished, averaging only about \$25,000. This was caused partly by a bad slump in business in 1938, when production went down to 25,800 tons, and partly by deterioration of the average selling price represented by the grades in which orders could be found for the machines.

With the outbreak of war in Europe, the demand for paper increased, and in 1940 Madison made a record total of 31,000

tons. This high production, together with the greater per ton requirements of the specialty grades, put the mill in another power bind. To partly meet this, a 1,200 h.p. motor was removed from the East Millinocket mill, rebuilt to 60 cycles and installed in tandem with the 40 cycle motor on No. 2 grinder line, to allow for using additional purchased power. This year, mill earnings were up to \$121,000, but most of the profit came from the sale of 5,000 tons of sulphite pulp, No. 1 machine actually losing money. By this time, some of the earlier papers made on No. 1 had been dropped, and longer runs were being obtained on such grades as novel news, teletype and telegraph blank, B-Publication and poster. These were all low-priced papers. At this time, when the average net mill selling price for newsprint made at the other mills was \$41.50 per ton, the Madison mill was netting only \$45.70 per ton for the No. 1 machine "specialty" grades, nearly \$7.00 a ton less than in 1937.

The makeup of the business for No. 2 machine had become even more weird by this time. All the papers listed earlier, except the silk finish and box liner, were still being made. In addition, it was producing an oiling manilla, sold to a converting mill, and a number of groundwood grades -- poster, teletype, railroad manilla, colored newsprint, groundwood mimeo, waybill manilla -- originally made on No. 1, and a heavy groundwood sheet called "ticket bristol". Prices of the No. 2 grades remained about the same as they had for several years, and the machine made a few dollars per ton.

This general situation brought about the first major expenditure for new production equipment at Madison in nearly twenty years.

The Company had been for some time eyeing the Sunday rotogravure newspaper supplements, which had historically been printed on a special rotogravure sheet. Several tries had been made at Madison at different times to make a marketable rotogravure, without proper equipment and also without success. While this field was being invaded by the "super-news" sheet developed in Canada, it was felt that the Company's newsprint price position, which will be discussed in another place, should entitle it to favorable consideration by the publishers should it offer a respectable rotogravure -- not a substitute, but a real supercalendered rotogravure paper. In view of past experience, the mill people were not at all confident that they could make a satisfactory base stock for this purpose, but it was finally agreed that if proper supercalender equipment were provided some way might be found to make the base paper. Estimates of the cost of the job were presented to the Directors, and somewhat unexpectedly, they approved.

In the process of estimating, a proposal had been obtained from B. F. Perkins Company on a 136" supercalender, including, as it happened, a Reliance Electric drive, the intention being to get other bids if and when the work was approved. However, immediately following the action of the Board, the Boston office received instructions from the Vice-President in charge of Manufacturing to "get something ordered before they change their minds", and this stack and drive were bought within minutes. Poor Jim Wade, the wonderful old gentleman who had handled the Company's account for General Electric for so many years was heartbroken, but he did not have a chance. Except for the unexplained Allis-Chalmers generating unit, this was the only important purchase of anything other than General Electric rotating equipment in 40 years, and

with some very minor exceptions the last for the next ten years.

This job, involving an extension of the finishing room downriver, a Cameron winder and a new Farrel-Birmingham roll grinder, was completed late in 1942. It was really too late in the game. The "super-news" sheet, sold at only a few dollars a ton above newsprint price had become too firmly entrenched. There was the expected difficulty in making a uniform base stock for super-calendering; the new working area was badly crowded, not from poor design but to hold down expense of construction, and the labor cost on the operation was high. Some additional business resulted, but it was not possible to obtain orders sufficient to allow the equipment to operate continuously, and the operation was not very profitable.

In the next two years, the demand for paper caused by Lend-Lease and the entry of the United States into World War II pushed up prices faster than costs. Sulphite pulp sales remained at about 5,000 tons in each of these years, and although paper production declined to 25,000 tons in 1942 due largely to Government Controls of consumption, the mill did quite well, earning about \$300,000 in each of these years. This was in spite of the fact that both were low water years. The power situation in fact was so bad in the winter of 1941-1942 that for several months such extraordinary measures as the use of internal combustion engines to drive mill equipment were taken. A heavy gasoline driven air compressor, moth-balled after the Mattaceunk power station job, was shipped to Madison and put into service, and a diesel engine bought to go into a towboat which had been built at Millinocket was stopped en route, diverted to Madison, set up in a temporary shelter,

and belted to the filtered water pump.

During the war years, capital jobs were dictated by necessity. There were no capital improvements in 1942. In 1943, the gas cooler in the sulphite mill began to give out, with lead almost impossible to obtain. It so happened that just at this time the old Orono Pulp & Paper Company mill, owned by Eastern Corporation, was being dismantled, and through the intercession of Benjamin Isaacson Company, of Lewiston, the War Production Board allowed the Company to buy the gas cooler from this mill and junk the old one, because this resulted in a net increase in the amount of scrap lead. In 1942, the Federal Fuel Administration had ordered the Madison steam plant converted from oil to coal. This was an unwelcome development, but there was no choice. A wooden coal pocket was built on the east side of the mill yard, along the main line of the railroad, partly on land leased from the Maine Central. Grates were installed in the furnaces of the four oil-burning boiler units, and these were fired by hand, starting some time in 1943. A priority rating was eventually granted for mechanical stokers, but there was of course a great deal of delay in obtaining this equipment. Late in 1944, however, an installation of Riley stokers was completed, a tile coal silo, 18 ft. diameter inside and 38 ft. high, served by an extension of one of the spur tracks, was erected near the northeast corner of the boiler house, and coal and ash handling equipment was added. This equipment was furnished by J. C. Corrigan Company of Boston.

Production, although it picked up a little as operation under war-time conditions became a way of life, remained low in 1943 and

and 1944, averaging about 26,500 tons each year. Sulphite pulp sales in the same period ran about 4,000 tons a year. By this time, however, costs had risen faster than the controlled selling prices, and earnings went down accordingly, averaging about \$86,000 per year for these two years. Deliveries of peeled pulpwood, which had made up 50 percent or more of the mill's wood supply since the beginning of the specialty period, had dropped to about 20 percent of consumption in 1944, due to shortage of manpower in the woods, and the plant was almost entirely on rough wood. Inventory was down to a point where the mill could not wait for a river drive and had become dependent upon rail and truck shipments. At this time, hauling out of the woods was still pretty much a winter operation, and the mill obviously could not take in its whole supply during the hauling season. Truck wood could be delivered into the holding ground at North Anson, but, as has been noted, it was deemed unsafe to have any large amount there during the spring break-up. In 1944 and 1945, therefore, the Spruce Wood Department built a stacker on dry land at the mouth of the Carrabasset River, to pile truck wood above high water mark in an artificial diked pool, from which it could be sluiced into the river in small quantities as needed, using pumped water. A second stacker was built at this location in 1946 and 1947, and the pool was enlarged. The remainder of the wood supply, some right off the stump, was delivered directly to the mill. Under these conditions, the wood room equipment could not cope, and only the fact that everyone was in the same fix allowed the extremely dirty paper being produced to be sold. Appeals to the War Production Board resulted in their recognizing this situation by granting priorities to a number of mills for the purchase of hydraulic bark-

ing equipment which could handle green wood. The Madison mill was one of these, and an Allis-Chalmers streambarker was bought and installed on the second floor of the wood room in 1945. The mill was also allowed to buy at the same time a new Haug refiner to reduce the loss of groundwood tailings.

No river wood was cut in the 1944 season, and there was no more driving until 1952 and 1953, when small drives were made from cutting of mature wood on Company land along the river. In 1952, an experimental slasher plant, to cut into four-foot lengths wood delivered as logs, was built at North Anson. This consisted of a small building housing a 60-inch saw, driven by a 35 h.p. motor, with the necessary conveyors to handle logs to the saw and four-foot sticks to the stacker uptake. It was not operated extensively. The entire stacker outfit, which, with improvements, was capable of piling around 17,000 cords, was removed in 1954, after wood consumption had decreased and the policy was again to use peeled wood as far as possible.

Earlier mention has been made of the cracking and movement of the concrete substructure of the Anson power house. This had been going on now for some twenty years, the cracks opening and closing in a considerable range, but with no discernible cycle. In 1946, it was found that the speed rings of some of the wheels were cracked, the wicket gates were binding and that the units at the north end of the station were so far out of line that the impellers were rubbing against the throat rings. This began to be alarming and Hardy Ferguson was called to investigate. As before, no evidence of settling or movement on the ledge was found and there was nothing to indicate any fault in the design or that there

was any danger to the stability of the structure. Hardy Ferguson's conclusion was that the trouble was caused by the phenomenon of concrete growth in the substructure. This was confirmed in a report made by Stone & Webster Engineering Corporation after an examination in 1953, and by the Portland Cement Association, who took core drillings from the generator room floor 4 - 5 inches into the ledge in 1954.

As there was no cure, the mill had to make the best of the situation. The units were shut down one at a time. The speed rings were repaired by stainless welding. A boring rig, with the tool at the end of a long bar, designed by James Seams, the Master Mechanic, was built in the shop. This was mounted on top of the draft cone of each wheel in turn, and the throat rings were bored true.

The generators of the Anson units, being direct connected to load, without intermediate transformers, were particularly vulnerable to lightning damage, and over the years the windings had developed pinholes from corona burns. Between 1943 and 1949, all the generators were overhauled, and new windings were put in where necessary. By 1950, additional cracking and movement had occurred, all of a nature consistent with the theory of concrete growth, and following the Stone & Webster report other repairs were made, including reinforcement of some of the crane steel, which had been distorted by movement. The hydrocones were also cut off at this time, with no apparent effect on efficiency.

The selling prices on Madison papers had been static for two years, under government controls, but the pressure of rising costs

forced a relaxation of these restrictions, and there were fairly substantial price increases on nearly all grades, starting in 1945. In this year, production was pushed up to around 28,000 tons, and it averaged about this figure for the next eight years. While with the end of the war in Europe the sale of sulphite pulp ceased abruptly, 1945 and 1946 earnings were \$119,000 and \$273,000 respectively.

The conditions during the war years of course presented the mill with many unusual problems of supply and maintenance, which were met with as many imaginative improvisations. The salvaging of what would normally have been unusable pulpwood was developed to a high degree during this period. Defective sticks were split, sawed short and cleaned up on the rossers or with axes, to remove rot and seams. This practice was found to be effective in reducing dirt, and although cull and waste equivalent to as much as 10 percent of consumption was sent to the boilers, it was continued until late in 1954. Pulpwood prices had been pegged, but scaling became pretty liberal. Almost anything that had bark on it was fair game for the pulpwood producers, and it was quite usual to find hackmatack, poplar and pine mixed with the spruce and fir. One carload of wood, when opened, was actually found to contain almost entirely pine "schoolmarms" -- the crotch pieces from pine cut for sawlogs, and unusable.

The repair shop of the Madison mill was not as well equipped as those of the other plants, but the crew performed minor miracles in keeping things running. In addition, they found time to take on sub-contract "defense" work, machining several thousands of castings for Mason-Neilan valves used chiefly in the petroleum industry, in addition to a number of miscellaneous jobs of lathe

work.

Because of the nature of the Madison product, no great amount of paper was made directly for Government agencies, although there was some. There was a frustrating attempt early in the war to make target paper. This failed, because the sheet could not be made strong enough without a lot of sulphite in the furnish, and with a high percentage of this stock bullet holes would not punch out cleanly.

With the end of World War II, the Madison mill had a period of prospertiy. The year 1947 was a very good one. The steam plant was converted back to the use of oil fuel. Prices averaged \$20.00 a ton higher than for the preceding year, and both machines showed good profits. The Sales Department had opportunity to be more selective about orders, and the machine runs on poster, groundwood converting papers, in a variety of colors; groundwood mimeograph, toll ticket, and a pale green so-called "eye-ease" paper for children's books became substantial. A converting operation was started about this time, a heavy groundwood paper in two colors, flesh and white, being cut into small sheets with rounded corners, which were banded in packages and sold in considerable volume as "stocking inserts" used in the packaging of women's hosiery. This perhaps should not be considered the first converting operation. Starting some time before; the date is uncertain; Madison had been making "blasting rolls" -- small tightly wound rolls of screenings paper used to plug holes drilled for explosives in construction excavation. These little rolls were made from time to time at least as late as 1952, on the Langston winder, but not always from screenings. In 1947, the mill made earnings of nearly \$600,000. There were a

few dark spots, notably the inability to maintain uniform quality, and there was still the colored broke problem. This had not been so bad during the war years when almost anything would go, and a proportion of broke could be put into almost any paper. Now it became a severe headache again.

During all these years the grist mill operated by N. A. Weston estate had stood in the mill yard, on the last lot between the mill and the main line of the railroad not owned by the Company. Negotiations some years before for the purchase of this property had fallen through. When the coal handling equipment was installed during the war, a house for the steam hoisting engine operating the coal drag had been built within a few feet of the south end of the grist mill, actually partly on the Weston lot. In 1946, damages were claimed by Mrs. Weston for trespass, for deterioration caused by exhaust steam from the engine entering their building and the fact that light had been excluded from some of their windows. This claim was disposed of by the Company purchasing the property in 1947 for \$15,000.

The wood handling problem had not been completely solved. Peeled wood was still scarce and it was necessary to pile along the railroad so that deliveries could be spread out over the year, and this was costly. Furthermore, shipments could not be sufficiently well controlled to avoid demurrage charges at the mill. It was impractical to put excess deliveries into the mill pile, as handling facilities were limited, and reclaiming was expensive. Some time before 1948, a spur track had been run from the main line of the railroad up to the old piling ground, and a temporary conveyor was built so that car wood could be piled there. This makeshift was

unsatisfactory. Somehow, the manufacturing people convinced the Spruce Wood Department that the problem of excess wood deliveries was their baby, and in 1948 they built a new side-track, conveyors and a substantial wooden stacker in this location to handle receipts of both rail and truck wood in excess of consumption. In January, 1949, there was no demurrage on pulpwood cars for the first time in many years.

During this year and the next, the mill ran into a period of low water. During the early months of 1948, water storage was entirely empty, and low flow conditions prevailed through 1950. Purchased power cost which during the eight years since the installation of the second 60 cycle grinder motor had been running around \$50,000 a year, jumped to \$120,000 at a time when other costs were rising rapidly, and when the wood still had to be culled heavily to maintain quality. As a result, earnings dropped to \$380,000 in 1948, which was not bad, but with lower prices and poor orders the mill made only \$77,000 in 1949, which was serious, and led to another development. In the meantime, there was the towel episode.

The paper towel had become a household necessity. Nowadays, the ordinary paper towel is white, soft and strong, made mostly of bleached fibre, and containing a substantial proportion of chemical pulp. At that time, however, there was a considerable market for unbleached groundwood towels, which were selling in competition with better grades on a price basis. Most of them were of a quality which no housewife would look at today. They were made largely by mills which also produced tissue of one kind or another, and were in many cases the product of different plants,

some mills producing the paper and selling it to converters to be made into rolls and sheets.

Over the years, the Madison operation had of course been the subject of a tremendous amount of discussion which always came back to the conclusion that a small mill had to make a product in which as much value as possible had been added to the pulp on one way or another. This had been the rather vague basis of the program since 1929. A logical extension of this thinking was that the mill should also convert its paper into an end-use product. This had been successful in the case of the stocking insert business.

William O. McKay, President of the Company at the time, had always had a special interest in the operations of the Scott Paper Company, through a personal friendship with one of its officers. Scott was one of the outstanding examples of the effectiveness of doing work on the pulp, converting and marketing, and one of their best-known products was the paper towel.

During some of the war years, the Company had made on No. 4 machine at Millinocket a paper which was essentially creped newsprint, used in a textile processing operation. It had an excellent deep crepe, much better than that of most of the groundwood towels on the market. With this in mind, decision was made to go into the towel business at Madison in a modest way, in an attempt to bolster up the sagging earnings of the mill. It was flying in the face of Providence to try to make both quality flat and creped papers on the same machine, but in view of the experience at Millinocket, there did not seem to be any good argument as to why it should not be tried. A report to the Survey Committee of the

Board of Directors, (we will explain this Committee later), recommending adoption of the program was prepared by Robert A. Haak of the Sales Department, later President of the Company, and the writer. This was co-signed by the Manager of Sales and the Manager of Manufacture, and the project was approved. The writer was put in charge of the job.

The third press on No. 1 machine was equipped with an old hypoid gear drive unit which had been taken out of service at Millinocket. The first top dryer was fitted with a creping doctor, cut loose from the gear train and arranged to be driven through a belt and cone pulleys from the third press intake shaft. All the parts were made either at the mill or at Millinocket.

For the converting operation, the upper three floors of the Indian Spring mill were cleared out, fire escapes and wash-rooms were added, and the interior was painted with fire-resistant paint. M. D. Knowlton equipment for making cores for the towel rolls was installed on the top floor, where there was also storage space for the core paper, made on the wrapper machine at Millinocket. Two wooden bins, extending through to the floor below, held the manufactured cores, which were fed into the bins by conveyors. Two towel roll winders and an interfolder were purchased second hand from Steven & Thompson Paper Company. The roll winders were re-conditioned tissue winders, and were not the same size, one being six towels wide (66") and the other five. This equipment with work tables and light conveyors was installed on the third floor, which also provided space for storage of the mill rolls of creped paper. A carton chute led to the second floor, which was the warehouse. This was provided with a system of gravity conveyors for handling cartons, and from this warehouse, through an opening

in the down-river wall, a chute, in a corrugated metal enclosure, went down to a small truck dock. There being no railroad spur on this side of the canal, the rolls of paper had to be trucked over from the mill, and cartons of finished product were trucked back to the finishing room area for loading on cars. The name "Indian Spring" was adopted for the product and copyrighted. This was done because the Sales Department quite properly did not want to use the Company's name too prominently in connection with an entirely new and untried product. Roll and sheet package labels, in a green and white color scheme, were designed for printing by a Massachusetts firm. Piece-work rates were negotiated with the International Brotherhood of Pulp, Sulphite and Paper Mill Workers local. A foreman was appointed; men were selected to handle the mill rolls, make cores, operate the roll winders and seal and handle shipping cartons. Women were employed to run the interfolder and to wrap and pack towels.

The converting plant was to be operated on the day shift only, five days a week. This of course came nowhere near taking care of the output of the paper machine on a continuous basis, and the plan was to run the machine on creped paper at intervals. As the main line drive pulley had to be changed each time creped paper was made, one-week runs were projected. With orders already coming in, the first creped paper was made and the converting operation went into business in April 1948.

This project really took off. The Indian Spring towels looked like an immediate success. The market was ready for them, the package was eye-catching, if not beautiful, and the Great Northern name, while not emphasized, was a strong selling aid.

True, the crepe was not as good as it should be, and the paper was harsh and not very clean, but this was interpreted by the trade as a start-up condition, and the produce was pronounced competitive.

At the beginning, the roll towels were wrapped and shipping cartons were sealed by hand, but within a few weeks two Standard-Knapp case sealing machines, which had not been received in time for the start-up, were in operation, and shortly thereafter a Lawton Automatic roll wrapping machine, also late in delivery, was started up. The converting operation quickly settled down into what was, by actual comparison of cost, one of the most efficient in the business. Orders poured in faster than they could be filled. By the middle of May, the converting plant was running two shifts, and the margin of profit was highly satisfactory. Orders even began to come from other converting mills for Madison towels to be wrapped in their labels. A line of banquet table cloths made from the creped paper, was added.

This happy situation did not last long. The expected improvement in quality did not materialize, and while the efforts of the Sales Department continued to produce a flood of orders, a paradoxical torrent of complaints, covering about every fault in the book also began to be received. The paper was harsh, weak, dirty, dull in color; was even said to be water-resistant, and it had too little crepe. This last was really the serious problem. There was plenty of crepe in the paper as it came from the dryer, but by the time it had gone through the machine, this was nearly all gone. Over the next six months, the mill tried everything they could dream up to improve the sheet. A pressure roll was tried;

remained a mystery. There is no question that a satisfactory sheet could have been made, given time and money, and while the manufacturing people continued to hope that the operation could be revived, it was too late. The Sales Department had had enough. Stock on hand was converted a little at a time and sold at a substantial loss, and this project, which had showed such a promising start, was abandoned in October 1950. The potential of it can be measured by the fact that nearly half of the capital expenditure was recovered in profits in this short period of operation, in spite of the losses incurred at the latter end. In 1951 and 1952, a small amount of creped paper was made on the experimental machine at Millinocket and shipped to Madison, where it was converted into industrial type towels, both sheets and rolls, in plain wrappers, to oblige one customer who for some forgotten reason needed a groundwood towel, but this was incidental.

This story has been told in some detail for two reasons. First, it was a classic example of the failure of a project which might have changed the history of the mill, because of higher management's sublime confidence in the theory that with sufficient sweat bricks could be made without straw. Second, the GNP symbol came from this fiasco, in a roundabout way.

Apart from the policy of playing down the name of the Company in introducing the new product, the Sales Department wished to avoid any possible identification with the Northern Paper Mills, of Green Bay, Wisconsin. Confusion occurred anyway, but this is incidental. It was the thought that the Company's name should be displayed inconspicuously in connection with some kind of trademark, something which Great Northern had never had. The letters

"GN" had been put on logs in the stamp-axe days, and a burgee with the legend "GNP CO." had been flown on occasion, but these did not constitute a trade-mark. No outstanding ideas being forthcoming, they more or less in desperation fell back on the old formula of fitting the letters "GNPCO" into a circle which represented the end of a log lying at a slight angle to the viewer. The words "Manufactured by" bisected the body of the log and the name of the Company was printed in small letters below the design. It was not a very imaginative effort, but the timing required some decision. This design was copyrighted.

For some little time, Symonds-Payson Company, of Portland, had been trying to interest the Company in their services as an advertising agency, another thing Great Northern had never had. When this symbol came out on a Company product, they were quick to point out its amateur character, and, to show what they might have done, prepared some sketches, in several colors, of a "GNP" monogram, with the letters "CO" beneath, superimposed on the conventionalized end of a log -- a series of concentric circles, the outer one serrated to represent bark. The writer, who was in charge of such advertising as was being done, kept these drawings, and in 1952, in response to a request from M. C. McDonald, the new President, for a Company emblem, resurrected them and incorporated this symbol into the design of a new newsprint roll label first used in that year. Some ten years later, the "CO" was deleted, on the suggestion of a new advertising counsel. This change, without any balancing compensation in the design, left it artistically weak, and in 1968, under still other advertising counsel, it evolved into a more sophisticated "GNP" logotype, the log-end convention disappearing entirely.

Let us now go back to 1948. Early in this year the super-calender, which had been shut down for some time, was put back into use. This aggravated the already nearly impossible conditions in the finishing room, as, due to the location of the supercalender equipment, the big reels of uncalendered paper had to be moved through and even sometimes stored in this crowded space. For fifty years, paper had been trucked out of the finishing room for loading into cars on an open platform, with the machine room exhaust fans drawing a blast of air through the open doors. With sheeting, converting and ream sealing operations, employing a considerable number of women, going on in the finishing room, this was intolerable during the winter season, but pleas for an enclosed trainshed had fallen on deaf ears. However, with the start-up of the super-calender, and the discovery that not only was the sheet blowing but that the temperature of the rolls could not be maintained under these conditions, the mill in desperation began to enclose the platform with corrugated aluminum sheets on wooden studding, putting the cost into repairs. The advantages of this enclosure were so obvious that the job was legitimized while in progress, and capital funds were provided for its completion.

Madison had for some time been making a dry finish paper which was shipped to a converter for oiling for meat-market use. The idea was conceived that it should be possible to make this oiled paper right at the mill, and along about this time efforts were made to do this on the calender stack. This failing, the Langston winder was rigged up as an oiling device, and experiments were conducted in this direction for some time, without producing a successful sheet. Five panels of automatic flashboards, hung on

pivots and held in place by sliding counterweights instead of the conventional dam pins, were built and installed on the Madison side of the log sluice. In 1948 also, the Madison Woolen Company's water rights, together with its old wooden building and land lying west of the canal, were bought by Great Northern. The following year the building was torn down and the space which it occupied was made into a parking lot. In that year also, a battery of Vortrap centrifugal cleaners was installed on No. 1 machine to help improve quality, and in 1949 and 1950 the old dryer hoods, pieces of which had begun to fall into the machines, were replaced.

The year 1949 was a bad one. Water conditions were very poor -- so bad that in the early spring the mill was using a percentage of stock made of old newspapers, bought in Boston and pulped in the beaters. This did nothing at all for the quality of the paper, but helped keep the machines going. A slump in business, starting in the second quarter, brought not only lower prices, but an order list which again involved the mill in short runs and a fantastic schedule of color changes, resulting in the drastic decline in earnings previously noted. In 1949, No. 1 machine was making B-1 and B-2 converting papers in at least sixteen colors and tints; Railroad Manila in two colors; Waybill Manila in four colors; Groundwood Mimeograph in six colors; Poster in eight or nine colors; hanging paper, pencil tablet, white box liner, and, on occasion, Butcher's dry finish and imitation parchment. No. 2 was producing Dynamite Shell paper in two colors; imitation parchment, Butchers' Water Finish in four or more shades, some treated with wax at the calender stack; B-1 groundwood converting heavy-weights and light-weights in a dozen or more colors; Textile

Wrapping papers in six colors, including a "duplex" sheet, white on one side and calender stained blue, green or buff on the other; screenings in several shades of brown, novel news, school drawing paper and Braille paper. The B-1 and B-2 designations were a carry-over from the National Industrial Recovery Administration Code days, "B" denoting unbleached pulp and the numbers 30% to 50% sulphite and 30% sulphite or less, respectively. They covered a broad range of weights, finishes and calipers, all the way from such specific grades as teletype, tobacco bag, telegram blank, printing sheets and the "stocking insert" paper -- all long-run, light-colored, medium weight sheets-- to black photograph album paper and a light-weight in twelve or more murderous colors, used in the manufacture of children's wax crayons. All these same grades were being made in 1950 and 1951, but with substantially better earnings, due almost entirely to lower costs in 1950 and much higher selling prices in 1951, by which time No. 1 grades were averaging nearly \$147.00 per ton net mill, and No. 2 grades \$161.00.

By this time, the mill had learned a great deal about making "specialty" papers. Filler clay was being used extensively to improve brightness and finish, purchased bleached pulp was being mixed into the furnish on some grades, and zinc hydrosulphite bleaching in the machine chest was fairly common. Standard specifications, rather informal, had been set up for most of the regular grades, and moves were being made in the direction of quality control based on the specifications rather than on expediency, with a fair amount of success. However, it will be evident to anyone reading this story that the mill had never truly been converted for specialties as had many of the smaller newsprint mills in New York and the Lake States, which were its principal competition. Ground-

wood quality varied with the amount of power available; the chip producing equipment was not adequate; no work was being done on the sulphite pulp beyond running it through a jordan; the pulp screening systems, while quite efficient, were obsolescent; the primitive method of small batch mixing in beaters resulted in unsatisfactory stock blending, and the nature of the paper machine equipment did not allow the necessary refined control of formation, basis weight and caliper. Moreover, the Company had had no formal program for forecasting trends in the market, or for upgrading to meet even the more obvious of these. However, the winds of change, although no more than a faint breeze, had begun to blow across the Great Northern Paper Company, and the manufacturing organization, closest to the source of power, sensed this.

In the spring of 1950, faced with the above conditions and the results of 1949 operation, they began to press for correction. In april, a request was submitted to the Directors for initial funds to begin a long-range program of improvements, and the sum of \$250,000 was allotted. With this, an extension housing a control laboratory and an office for the paper room foreman was built on the east side of the machine room, with calender and press roll storage beneath it; a ten-knife chipper and improved chip screening equipment were installed, and two Improved Paper Machinery Company stainless steel gravity deckers were added to the sulphite pulp system-- the first substantial use of stainless steel at this mill. On No. 1 machine, the old plain presses and smoothing press were replaced by a new suction second press. A stainless-clad flow box, designed by the mill and constructed by Lukens Steel Company, with a new Van de Carr slice, was also provided for this machine. A new dandy roll, with high-speed drive, Vickery felt

conditioners, and a battery of Vortrap centrifugal cleaners were installed on this machine also.

Efforts were made again at this time to get more speed out of the old No. 2 machine, which was essentially just as it had been installed in 1899, right down to the old wooden tooth miter gear drives and jacketed couch roll. The old brick arch foundation had settled on the back side so that by this time nearly two inches of lead had been poured under the sole plates to keep it level. The worst problem was the deterioration of the floor steel under the press drives, which allowed excessive movement and vibration. Along with the replacement of the slice, some new steel was put in around these drives, but without major expense there was not much to tie it to, and little improvement was effected.

It should not be inferred from any comment such as the foregoing that the Madison mill was ever in a seriously run-down condition. The maintenance crew was always active, dedicated and ingenious; the mill was kept in good shape, and there were no more major breakdowns than might be expected in any mill of this vintage. Repair costs were of course higher per ton than at the other plants. The chronic situation, however, was that as the equipment in the mill grew older, the capital improvements program had not permitted sufficient funds to replace it. For the same reason, there were a few places around the buildings where major expenditures would have been necessary to correct the condition, which were not up to Great Northern standards, but the mill was by no means falling apart.

One of the more successful Madison sheets was groundwood mimeograph paper. About the time the towel operation began to run into

trouble in 1949, the Sales Department came up with an arrangement with a wholesale paper distributor to make, package and stock for direct shipment a line of mimeo papers in two sizes, two weights and eventually thirteen colors, which was designated as "Duplication Bond, Service Grade". The Indian Spring mill towel storage and handling facilities were used for this paper, and traffic there got pretty heavy before towel shipments were phased out. Envelope-size printed folders containing samples of this paper were made up in quantity at the mill for the use of the Sales Department, the first formal promotional sample presentation to be used by the Company. Except for some problems with the inevitable small orders for a carton or two at a time, this grade was profitable. Domestic shipments were made to points as far away as the West Coast, and as it is recalled, there was even a little foreign business in this grade. Also, starting in May, 1950, the mill began to receive orders for drawing paper produced on No. 2 machine in a number of colors, wound into rolls about 22 inches in diameter and 2¼ inches wide. These rolls were made on the Langston winder, modified for the purpose. They were shipped to Chicago, and the rumor was that they were used for printing "numbers" slips. However, we believe they were really for tickets of some kind.

The Duplication Bond business compounded the never-solved problem of dry colored broke. In an effort to mitigate the situation, an agitated tank was provided in which the color could be partially bleached out with zinc hydrosulphite, and this was fairly successful, a gray-colored pulp which could be used in some grades being produced.

While many of the improvements authorized in the spring of

1950 could not be implemented until well into the next year, business improved a little; longer runs could be made; cost and quality control was further tightened up; water conditions were much better in the last half of the year, and in 1950 the mill made \$233,000, most of the gain being on No. 1 machine grades, aided by sales of sulphite pulp, for the first time in five years, amounting to 2,400 tons.

By now, the management had come to the realization that Madison was at another critical point, and that the money expenditures authorized early in the year were only a beginning. No. 2 machine was obsolete. The sulphite papers which had been its salvation for so many years were going out of use. More and more the machine was being run on groundwood grades, at the extremes of the weight range, at low efficiency, on orders which really belonged on the other machine. Not only this, but the handwriting was on the wall for No. 1 machine as well, although it was doing quite well at the moment. The growth in consumption of low-brightness so-called "B" papers was slow, and competition from ex-newsprint mills which had really upgraded was getting stiffer. Besides, the necessity of making groundwood papers on both machines was, for lack of power, overtaxing the capacity of the mill to produce this pulp, putting the situation back into one comparable to that of the 1920's.

In the summer of 1950, near the end of what was a four-year dry period, Roy Weldon, Vice-President of Engineering & Research, made a serious study of possible power sources for Madison. He found that the Company had no hydro-electric power site that could be developed; that the Central Maine Power Company would not be in

a position to make a firm contract for additional energy until the spring of 1952; skirted the possibility of purchasing the Hollingsworth & Whitney groundwood mill; discounted diesel-electric power as unreliable for continuous operation; discarded the idea of a high-pressure steam generating plant as being too expensive to construct, and suggested that consideration be given to the installation of two 4,000 K.V.A. gas turbine generators. The estimated cost was \$1,300,000. At the same time, Fred W. Mears, Assistant Manager of Sales, and the writer, then Assistant Manager of Manufacture, were making a comprehensive study of the whole Madison situation, and prepared a report for submission to the Board of Directors. The recommendations in this report were very strong medicine, calling for an increased groundwood supply either by putting in another grinder and motor, with a firm contract for purchased power when it became available or, shades of 1901, by building a pipe line to connect to the Hollingsworth & Whitney mill, and making a deal with them for a regular supply of pulp to be ground from wood furnished by Great Northern, a possibility which had been tentatively explored; a groundwood bleaching plant ; an entirely new stock mixing system to replace the old batch beaters; enlargement and rearrangement of the finishing room; the replacement of No. 2 with a new machine, and some corollary minor improvements, all at an optimistic estimated cost of some \$2,300,000. The idea of trying to buy back the lower groundwood mill also occurred to them, but was passed over as being out of reach financially. For the same reason, the part of the program covering a new machine was labelled "Future", and the rest "Immediate".

While these recommendations were made seriously, the authors,

in view of past experience, and in spite of faint indications of a more liberal policy, had little hope that such a proposal would be accepted in toto. Roy Weldon's suggestion for a gas turbine power plant never got off the ground, partly because of early poor experience with this type of equipment in another Maine power plant, but mostly because it called for too much money to blunt only one of the horns of the Madison dilemma. The report made by Fred Mears and the writer went to the November meeting of the Directors, but sure enough, before it got into the Board room a hurry-up call was received from the President to pick out of the "Immediate" category for submission those items which would do the most good and remain in the realm of reality as to cost. The bleach plant and stock system improvements were selected, with the thought that the results from them should make obvious the necessity for additional groundwood capacity. They were approved.

Ever since Hardy Ferguson had left the Company, manufacturing plant design had been handled by the Company's own Engineering Department, with an occasional assist from a consultant. The Company having no experience with bleaching, however, and the Engineering Department being preoccupied with the Ripogenus power development, the design of the 100-ton bleach plant was entrusted to Charles T. Main, Inc., of Boston. An addition was built on the river side of the beater room to house the equipment -- an 8 ft. x 16 ft. vacuum thickener and a heater-mixer, furnished by Improved Paper Machinery Company; an 11 ft. x 34 ft. Stebbins tile bleach tower, a re-pulper and the necessary tanks, pumps and auxiliaries, including a Fischer & Porter proportioning system, it having been decided to bleach groundwood and sulphite in combination. This was

the Company's first use of anything other than the mechanical Trimbey-type proportioning equipment. The bleach-making plant and bleach storage was located in and around the shredder room at the south end of the acid plant building, the old pulp shredder and conveyors being removed. The new stock mixing system was designed by the Engineering Department -- a Stebbins tile "Hydro-cycle" mixing tank, with impeller-type agitation and consistency regulation being installed in the beater room basement for each machine. Both the bleach plant and the mixing systems proved to be a little short of capacity for optimum performance. A Sutherland refiner was also bought and located in the beater room to treat sulphite for No. 1 machine. Contract for the bleach plant was awarded to A. P. Wyman of Waterville and work was started in the spring of 1951. It was planned to set the bleach plant building on caissons to ledge, but after digging for two weeks and finding no bottom, it was decided to use spread footings. After that, no major problem was encountered in construction.

In 1951, the mill was doing very well. Water conditions were excellent, costs were down, orders were in good volume, prices had strengthened, and the year's earnings came to \$600,000. Even the old No. 2 machine contributed to this result, and some 3,000 tons of sulphite pulp were sold. The new laboratory had been put into use early in the year, staffed by a control engineer and two or three testers, and regular control testing helped to improve operations. In view of these results, some additional capital expenditure was permitted. The shipping platform was extended southerly. A new Jones Pulpmaster was installed in the beater room to handle dry broke. During all the years that paper had been sheeted in the finishing room, ream sealing (the wrapping

of packages of 500 small sheets) had been done by hand. In 1951, the volume of Duplication Bond and other small sheet business had grown to such an extent that a new Smith & Winchester press cutter and a Lynch Morpac ream sealing machine were bought, a little electric hoist was provided to move paper to and from the basement of the finishing room, and the small sheet operation was moved into the basement early in the following year.

With work on the new bleach plant and stock system well under way and the mill showing good earnings, the manufacturing people were emboldened to make another stab at getting approval on the rest of the recommendations in the report of the year before. A specification was drawn up for a paper machine to replace No. 2, and preliminary estimates were obtained, one from a firm which had never built a paper machine, but was wishful. A tentative plan was worked out to add a fifth motor-driven grinder of the Great Northern hydraulic type, arranged to fit into a possible future replacement of the old Warren grinders. The intention was to send up the grinder job as a trial balloon at the November 1951 meeting of the Board, and be ready to follow up with the paper machine if the climate seemed to be favorable. The submission was duly forwarded to New York, but never got onto the table, as the Directors had other things on their minds at that time.

Meanwhile, Madison had another first, in a departure from Great Northern tradition which would seem unimportant now, but was almost heretical then. What the color scheme, if any, may have been in Great Northern mills in the very early days is not known. When the writer first saw the mills in 1924 there was a lot of dark green around, but just at that time all new paint, as it was required,

was gray. The shade was selected personally by William A. Whitcomb, then General Manager, and was originally a medium tint, but as his taste changed the color got darker, and by 1950 everything, but everything, in all the mills, inside and out, except the brickwork, was a dull war-time battleship gray, relieved only by white-upper walls and ceilings, and by the red sprinkler piping. In this year, an intensified accident prevention campaign was mounted throughout the Company, and as part of this program permission was granted, reluctantly, to brighten things up, starting with Madison as the smallest mill. A color plan, --two-tone green walls, light ceilings, "vista" green machinery, black guard rails, yellow or yellow and black hazard warnings, red fire protection piping and bright blue electrical equipment -- was worked out and adopted at Madison in 1951. This color scheme was based on the Pittsburgh Paint Company's "Color Dynamics" charts, but did not follow them exactly.

The bleach plant and the new stock mixing system were completed within a few weeks of each other in the early spring of 1952. At the same time a second Sutherland refiner was bought for No. 2 machine, but this, and a little Jones refiner for broke, were not ready for operation until fall. The cost of all of this ran to about \$500,000. A number of minor jobs were also completed in 1952. Some improvements were made in the acid plant; dryer pressure controls, a suction box carriage and a Poirier Suction Box Control were installed on No. 1 machine; a winch-type car puller was provided to move cars on the loading track, and day tanks, with an oil suction heater, were installed at the boiler house.

The mill made its first "A" paper starting March 3, 1952. It was not intended to swing over all at once to the bleached grades, but to selectively eliminate the less profitable unbleached papers as regular orders for bleached runs were developed. As it worked out, both "A" and "B" groundwood papers continued to be made until Madison was sold.

The bleach plant gave trouble. All the motors were overloaded, and it was necessary to swap them around and make other changes to correct this condition. The original drop leg did not give enough vacuum on the thickener and a No. 6 Nash pump was installed. The re-pulper shaft broke after a few weeks, was repaired and finally had to be replaced. The take-off on the thickener did not work well, and various other mechanical difficulties developed in the equipment, requiring quite a lot of rebuilding. However, by early fall the plant had straightened out. There were some problems due to lack of control when changes in the wood supply resulted in variations in initial brightness of the pulp. These were gradually overcome, but bleaching cost per point of brightness gain was higher than had been projected.

About the time the bleach plant started up, No. 2 began to run short of orders again, and the situation on this machine deteriorated rapidly. At the start-up on the morning of May 12, 1952, for instance, there were orders on hand for only five tons -- about three hours running time. This was an extreme, but for the next several months orders for the machine were seldom more than a day or two ahead. No. 2 had become a real problem for the Sales Department and was often kept going only by running Butchers'

Fibre and one or two other standard grades for stock as a calculated risk in anticipation of orders, and by transferring business from No. 1 machine, sometimes at a loss.

The weird schedule of orders for this machine is typified by the list for one actual month in this period, taken at random. In that month the machine made three runs of B-1 converting in white and flesh color; three runs of B-2 converting in manila, white and black; three runs of hanging paper; five runs of bleached converting in white, flesh and pink; three runs of Duplication Bond in a variety of colors including "limestone" and "granite" containing separately colored fibres; one run of yellow waybill manila; one run of No. 2 Textile, manila color; five runs of No. 2 Duplex Textile in buff and white, calender stained; three runs of No. 3 Textile in blue, white and manila; two runs of No. 1 parchment and two of No. 2 parchment; seven runs of Butchers' Water Finish in manila and primrose; two runs of Dynamite Cartridge paper in manila and red and three runs of groundwood drawing paper in two colors. It will be noted that quite a little sulphite paper -- the textiles, butchers' fibre, shell paper and imitation parchment -- was still being produced on this machine. The cost of these grades was badly hurt by high cost in the sulphite mill, due in part to the fact that sulphite pulp sales had dropped again to almost nothing, about the only remaining customer being Keyes Fibre, who took a carload a week. In 1952, the average selling price of No. 2 grades was up to \$178.00, about \$17.00 a ton higher than the year before, but the profit on these papers, after all the sweat that had gone into selling and producing them, was under \$5.00 a ton, about one-third the figure for the year previous. At that, it was a better return than had been obtained

for two out of the last three years.

The other machine was also having its troubles. Production of the new bleached printing papers had enabled the Sales Department to be a little more choosy of orders for unbleached grades, and the effort in this area was concentrated on accounts which would produce orders for longer runs, reducing time down and allowing better opportunity for quality control. The success of this effort produced its own problems, in that many of these papers were "specification" grades, sold to people who knew just what they wanted, and to make sure that they got it often had testing facilities more sophisticated than those at the mill. While somewhat longer runs were being achieved, they were still not really extensive, and the results were to a degree negated by the necessity of changing from bleached to unbleached and back again, by the continuation of color runs and by a wide range of weights and finishes. This in many cases did not allow the machine to get settled down on one specification before it had to be shifted to another. A case in point was the base stock for super-calendering, which had been put back into fairly regular operation on bleached paper. A good supercalender job of course requires that the sheet be absolutely uniform in caliper and density across its width. With relatively short runs, this was very hard to come by, apart from any consideration of stock quality or control. Complaints proliferated on non-conformance with basis weight, finish and caliper control. Poor winding, mostly due to uneven caliper, was the worst offender, as it hurt the pressroom performance of otherwise highly satisfactory paper. It was particularly troublesome in the new bleached printing paper grades, which were going to new customers in new markets. This

condition resulted in many rejections and a raft of price adjustments. Nevertheless, overall reception of the new grades was not bad, and regular business began to build up.

In the fall of 1951, the Company had hired John H. "Pete" Heuer to remake the Bureau of Tests, which story will be told in another place. By 1952, the Bureau was in position to lend substantial aid to the Madison mill in the way of quality control, and, for the first time, formal specifications and tolerances were drawn up for every grade and a more authoritative system of control was set up in the mill. By the last quarter of that year things had settled down a bit; production was up six percent over the previous quarter and was about as high as it ever had been at any time; it was not necessary to take so many orders for supercalendered paper, so that serious complaints had dropped off considerably, and the Sales Department was promoting business under trade names such as "Norprint" and "Norbright" for a number of grades. In 1952 the mill made about \$280,000. This was a severe drop from the year before, not unexpected, in view of the introduction of the new grades, but much greater than anticipated. It was not all due to operation. Labor and other costs were rising. Wood cost had gone up substantially between 1951 and 1952, hurting Madison more than the other mills because of its much higher chemical pulp formula and the necessity of hard culling of wood for quality. In this year also, accounting changes compelled Madison for the first time to bear its own depreciation, although it so happened that at this particular time the change made little difference. The situation on depreciation was noted earlier in this chapter.

At this point, Madison entered into its final phase as a unit of the Great Northern Paper Company. At the beginning of the year 1952, the presidency of the Company had been taken over by Manuel C. McDonald, the first "outside" chief executive officer the Company had ever had. As has been noted, the mill had not for many years enjoyed its early preferred status. William O. McKay, the former President, had been impatient with it. He had a number of times expressed a wish to be rid of it, but was convinced that any price which could be obtained for it would result in a book loss. This was unthinkable, and he made no serious effort to dispose of it. M.C. McDonald, unconditioned by any association with its "vicissitudes", and with a new outlook on the Company's future, was even less sympathetic. He was appalled by the disproportionate amount of sales and management effort needed to keep it in production, and by the wild fluctuations in the results obtained. Nevertheless, he addressed himself to the problem.

One of his earliest suggestions was that consideration be given to shutting down the Madison sulphite mill and supplying chemical pulp from the Millinocket plant, which had an excess of capacity at that time, and where reduced cost by reason of increased production would effect a net saving. The old Mitscherlich mill, with its long cooking cycle and relatively high cost was of course obsolete. As is recalled, only one other such mill remained in operation in the United States at that time. During the odd times that market pulp could be sold, it operated between six and seven days a week. After double time for Sunday operation went into effect in June, 1952, as a result of contract negotiations, it had been put on a schedule of not more than six

days, no Sunday run.

The reasoning was persuasive. Studies, based on current costs, indicated that there should indeed be a saving to Madison. This conclusion was stoutly opposed by the management of the mill, who held that only full production was needed to at least equalize cost, and that the Mitscherlich pulp was better for their purposes. In July, some 200 tons of Millinocket sulphite was shipped to Madison and was used during the week of July 28th. The results were less than satisfactory. Some A-grade paper was made, and extra bleach had to be used because of the low initial brightness. A run of specification B-1 paper had to be stopped and held over to the following week, as the strength tests could not be met. Nevertheless, this trial signalled the demise of the Madison sulphite mill, on the premise that there was no way to get it into full production, and that moves being planned would greatly improve the quality of the Millinocket pulp, so that there should be no problem.

The wheels were put in motion at once. Starting in December, No. 10 digester and blowpit, adjoining the screen room, were removed, and a hydrapulper was installed in this location. A new pulp unloading platform was built on the east side of the digester building. Two Towmotor fork lift trucks were purchased to handle pulp laps shipped on pallets from Millinocket and an elevator was provided to raise the pulp to the hydrapulper loading floor. Along with this work, involving substantial changes in the floor steel, it was necessary to replace other steel in the area which was found to be badly deteriorated. The Madison

sulphite mill, which in the meantime had been cut back to a five-day schedule, was shut down, and the machines began to use Millinocket sulphite on June 28, 1953.

Meanwhile, the upgrading of part of the production had brought back the colored broke problem. High brightness bleached papers and strength specification grades being made one week were just not compatible with large quantities of brightly-colored finishing room trimmings and waste from the papers made the week before, in spite of the best efforts to work the runs around so that dry broke could be put into Butchers' Fibre and the textile papers. Besides, the proportionate production of these grades was declining, and the business of getting rid of any meaningful amount of broke in this manner was bankrupt. In desperation, the mill had quietly begun to accumulate an inventory of dry broke in bales, and by late 1952 this had built up to over 300 tons, mostly piled outdoors. Something had to be done about this, and the Millinocket mill agreed to take it a little at a time and work it into newsprint. Shipments on a fairly regular basis were started in December and continued until the fall of 1952, when the pile got down to under 100 tons. By that time, the production of deep colors and short orders had been reduced significantly, and the accumulation of dry broke could be kept within bounds.

The change-over to Millinocket sulphite did not come easily. There was an immediate pitch build-up, and a lot of time was lost steaming wires until a chemical correction was worked out. Strength tests went to pot, and some specifications could not be met without increasing sulphite content to a point where other essential

temperature and speed were varied; doctors of all kinds were experimented with; creping on the press roll instead of on the dryer was attempted and at one time several dryers were cut loose from the gear train and fitted with a separate felt. No success. Softening and wetting agents helped a little, but the basic problem of lack of crepe could not be overcome. Orders began to slow up, and by August the converting plant was back on one shift. By November, all available storage space had been filled with unshipped product, and the operation was in deep trouble.

Efforts to make improvement were carried on through 1949. Wet strength chemicals and brighteners, and the use of purchased soda pulp and sulphite from the Millinocket mill did not seem to help very much. Bleaching with zinc hydrosulphite was tried, but was no more successful. The interfolded towels were particularly obnoxious when used in a standard dispenser, and the mill even went to the extreme of designing a special container from which this towel could be removed without tearing. This of course was not a practical solution, and the Sales Department would not buy it. Price reductions were to no avail. Efforts were made to sell the towels for industrial use, and for export, and there was sporadic activity throughout 1949, but it was apparent that nobody wanted this product. Even the other mills of the Company would not use them in their washrooms.

In the spring of 1950, with production practically at a standstill, the management hired a consultant. He soon put his finger on what was probably the answer, which was that the paper had not been dried enough before being creped, although why the operation was successful at Millinocket under similar conditions

characteristics were lost. The bleach plant got into trouble at once, and for the next six months was played like a piano. Bleach percentage, which had been running 1.0% - 1.5%, doubled immediately, and within a few weeks the mill was pre-bleaching the sulphite for 12 to 16 hours, using about 1.5% calcium hypochlorite in order to get the required initial brightness.

Right at this time the Millinocket mill was making ammonia base sulphite, and in this period its quality was actually deteriorating. By early 1954, however, initial brightness had been raised to a point where normal bleaching procedure and cost was restored. The strength of the finished sheet was another matter, and for some months, starting in the spring of 1954, a percentage of purchased bleached kraft was used in some grades to meet tests. By the middle of that year, the Millinocket pulp was in general much better, and was being shipped from a newly-installed Kamyr press, at lower freight cost; some orders had been lost, some had been dropped, and apart from variations in the quality of the sulphite things were more or less back on the track. With the sulphite mill shut down, the mill piled only about 7,000 cords of wood for winter, about half as much as the year before.

Meanwhile, the remaining nine digesters, the sulphite screens and deckers, piping and other processing equipment were removed and were salvaged for the mill, sold, sent to one of the other plants or scrapped. The space occupied by No. 9 digester was floored over for pulp bale storage. The old sulphur bin in the acid plant was given a new cement lining and made into a clay bin. This shut-down was a wrenching experience for the

Madison organization, but there was more to come.

It is not surprising that 1953 was a poor year. The whole operation was disturbed. In addition, labor cost had gone up; stock, bleaching and maintenance costs were badly out of line, the supercalender operation gave a lot of trouble and was unprofitable, and machine output was down to about 27,000 tons. Business was not good anyway, and with the advent of the bleached grades, some tonnage of the lower quality long-run unbleached papers began to be transferred to the other mills where it could be made at a better profit to the Company, but to the detriment of Madison. This year the books showed a loss of \$144,000, the deficit occurring entirely in the second half.

Other than the major work described, only repair-type projects were carried out. Wood was being put into the river from the stacker at North Anson, and it was necessary to top out the piers in the mill holding ground. The 40-cycle grinder motors were beginning to show the effects of long use and lightning strikes on the line, and three of them, together with one of the 60 cycle motors, had to be rewound. The new cutter bought for the small sheet operation proved to be unsuitable for groundwood papers, so it was sold back to the manufacturer and an old cutter re-conditioned to take its place. Payment of double time for Sunday work resulted in considerably increased cost for repairs to the paper machines, which had always been done on Sunday. In an effort to reduce this penalty, a program of taking scheduled shut-downs for repair and washup at opportune times during the week was put into effect in the spring of 1953.

The prospect as 1954 opened was a bleak one for Madison. The market for its grades had gone into a slump in the third quarter of the previous year, and this was deepening. The management of the Company was engrossed in the problems of the expansion at East Millinocket, and the Sales Department in developing additional newsprint business for the big new machine to be installed at that mill. Bleached groundwood grades were being made on both machines as dictated by specifications and the general order situation. The decline in sales of the sulphite papers made on No. 2 was being accelerated by poor quality as a result of the relatively low strength of the Millinocket sulphite and heavy use of dry broke in the furnish. A few regular orders for textile papers, a little Butchers' Fibre and an occasional run of shell manila were about all that remained of this business, and the machine schedule was filled out with a miscellany of white and colored groundwood grades, mostly unprofitable to make at the speed at which the machine could be run, and largely sheet business. On the other side of the machine room, No. 1 was being operated on bleached printing papers, super-calender base stock, a mess of colored poster and specification grades, and, of all things, newsprint, with the long-run orders of better-priced unbleached specialties going to the Penobscot mill where they could be made at higher profit; an eminently reasonable move from the standpoint of overall results, but hard on Madison.

The new President's basic planning for the Company at this stage was simply to add a big block of low-cost newsprint capacity by the installation of two wide high-speed machines,

and to then begin to convert the output of some or all of the existing narrow machines, obsolescent for the competitive production of newsprint, into other grades. The obvious first path of such diversification was in the direction of unbleached groundwood printing papers. This might seem to contravene the conclusion which led to the introduction of bleaching at Madison, but the difference was that the big mills, with their lower stock and overhead costs, capitalizing on the experience and connections acquired at Madison, were formidably competitive in this field, where Madison was but marginal. The program of gradually developing specialty production at the Penobscot mills by taking advantage of Madison orders was therefore logical, and No. 1 at Madison, if it did not make any money on newsprint, could at least help supply the demand for this grade, heavy at this time.

The fact was that the Madison mill had become a rather untidy side-show in the grand spectacle of the unfolding of the Greater Great Northern, and its very existence, demanding management and sales effort that could be used to better advantage elsewhere, was an embarrassment. A series of meetings held with the sales and technical people uncovered no magic solution to Madison's problems. They did produce a new grade, really no more than newsprint made from bleached stock, designed for the printing of paper-back books and given the name "Dynaprint". This was an almost instant success, and began to be ordered in some volume.

Forecasts made early in 1954 indicated that due to the expense generated by the East Millinocket expansion, Company

earnings for the year would be at the low point of the next ten, and that Madison would contribute a loss of some \$400,000. This latter proposition was unacceptable. On March 19th, M. C. McDonald addressed a memorandum to Roy V. Weldon, Executive Vice-President, C. M. Carrier, Vice-President and Manager of Manufacture and the writer as Assistant Manager, listing Madison losses averaging \$1,600 per day for the year to that date and reading in part:

"From the figures, we seem to have an impossible position and I can see no reason for long delay answering the \$64 question, unless it can be proven that somehow or another we can improve our position by at least \$20 a ton....I would suggest that you get together on this problem and....let me have your full report and recommendations."

As a result of this, a task force was set up to study Madison once more. The terms of reference contained an implied injunction against spending any important money, frustrating any creative program in advance. This committee reviewed the operation of the mill for the past twenty-five years, going over much of the ground that has been covered in this chapter of our story. In this study, it was developed that had the mill borne its own depreciation its average earnings during that entire period would have been only about \$21,000 a year.

The essence of the final reasoning and the majority conclusion of the committee is contained in the following excerpts from its report:

"While certain parts of the mill operation are efficient, it is not overall an efficient plant, and as a unit

of the Great Northern Paper Company cannot be made so without a very substantial investment.....

"Its history has been that in times in which business is very good, a profit can be realized, usually subject to higher taxes. (This referred to the "excess profits" tax). Thereafter, costs catch up with it very quickly, on account of its small size and inherent inefficiency, and it loses money. Any small disturbance in operation can throw it into a loss, since as part of a larger organization it is not as flexible as a similar small independent unit.....

"The studies made at this time have produced no program which would promise profitable operation at present production and present selling prices.....

"It is the feeling of this group that due to these conditions and to the opportunity for much greater return on money and effort expended at the Penobscot mills, the Madison mill should be disposed of."

This committee consisted of six people, heads or seconds-in-command of the manufacturing, technical, engineering, sales and financial departments. The writer was one; three of the others later became officers of the Company. It will be noted that the report referred to the situation versus that of an independent mill of the same size. Later, there was some second-guessing about Madison in connection with other developments. Some maintaining that had the operation been cut loose and set up as a subsidiary or a separate division, and allowed to work out its own destiny, it could have been successfully retained within the Company's framework. This is possible, but it was not in the cards. The management, under the conditions then

prevailing, was in no mood to consider a suggestion of this kind, and the committee could no more than hint at it. This experience was a bitter one for those members of the group who had been emotionally involved with Madison for a long time, but they did what they had to do.

Out of several alternate schemes intended to reduce current losses pending finding a buyer for the plant, the report recommended that No. 2 machine be shut down indefinitely; that No. 1 be run on a seven day week schedule on newsprint and selected orders of bleached papers; that the production of supercalendered grades be discontinued; that sheeting orders be reduced to a minimum and that the groundwood mill be supplied entirely with peeled wood, to reduce wood room expense. Loss for the year under these conditions was estimated to be \$232,000. All the recommendations were accepted, and the order was issued to implement them as soon as possible.

Everything could not be done at once. The supercalender went out of action almost immediately, and thereafter was only turned over occasionally to keep the rolls in shape. The change-over to peeled wood had to be a gradual process, as there was rough wood at North Anson and along the river. However, it was started promptly. Conveyors were rearranged to pile wood from cars, and wood room operations were reduced to a bare necessity schedule, running just whatever number of hours were required to keep the mill supplied. By fall, the wood supply was again about 50% peeled. Only a few thousand cords were piled. By the year-end, the wood room crew had been cut in half, and the mill was entirely on peeled pulpwood.

Shutting down No. 2 machine was contingent upon running No. 1 seven days a week, and this had to have the sanction of the unions, as the contract at that time still contained a restriction on Sunday operation. The problem was worked out without any great difficulty during the general labor conference which took place shortly after the report was issued, the Madison locals, while deeply disturbed by this development, being highly cooperative. Along with the general agreement reached on May 7th that year was a special memorandum giving priority to the hiring at East Millinocket of men permanently laid off at Madison, and setting up seniority rights for them. In the discussion of the situation at Madison, it was inevitable that the possibility of sale would be mentioned, and before the negotiations were concluded, word began to get around, via articles in the press, that the mill was to be sold. This was not denied by the Company, one officer making the comment that the plant "had been for sale for thirty years or more", which as we have seen was more or less true. In these reports, Hollingsworth & Whitney Company was mentioned as the possible buyer. As a matter of fact, no discussions in regard to sale to Hollingsworth & Whitney were under way at that time, although preliminary events which would lead to negotiations had already occurred.

The publicity, however, gave rise to an investigation by Robert Gair Company who were in the market for another mill. During June and early July representatives of that company made several visits to inspect the property and examine records, but a few weeks later indicated that they were not interested. There were also a number of inquiries from mill brokers, which were given the "make us an offer" treatment, for the most part.

During the first week in July, 1954, in meetings at Madison, details of the shut-down of No. 2 machine were worked out with the union locals, and on July 10th the operation of this unit was discontinued. Some orders, which could be made only on No. 2 machine had of course to be dropped. One of the casualties was the "ticket" paper in narrow rolls, which had been regular business since 1950. The remaining water finish sulphite papers, mainly Butchers' Fibre and the textile sheets, were simply discontinued. The Duplication Bond operation was turned over, by agreement with the customer, to the Pejepsco Paper Company. The crews of the two paper machines were consolidated, with the senior men receiving preference. The finishing room was also seriously affected by this move. Cutter operation was curtailed, and the crew involved in sheeting operations was called in only as needed. Grinder room operation was reduced to a normal five-day schedule, running longer only when absolutely necessary. The lay-off was worked down as far as possible to the newest employees in point of mill seniority. The supervisory force was reduced to skeletal proportions, by transfer of personnel to the other mills, arrangements being made with what was then the Research & Control Department at Millinocket to supply supervision for emergencies and during vacation periods.

Little new work was done this year. An extension about thirty feet square was added to the old repair shop. The other mills had long been provided with roll heading machines and electric trucks, but at this time the Madison mill was still up-ending rolls of paper on the finishing room floor, holding the top heads in place with wooden weights while the glue cured,

and trucking to the cars by hand. A heading machine was installed in 1954, out of repair cost, and after much speculation about the strength of the old wooden floor, an Elwell-Parker electric truck which would pick up rolls lying on the bilge, and load them standing on end, was shipped over from East Millinocket. The mill finished out the year with a loss of \$215,000, slightly less than estimated in the spring study.

Before we reach the end of the Madison story, it might be well to note what is known about the people who presided over its activities, and about its place in the community.

During the Company's first few years, the Superintendents of the plants reported to a resident Manager. Thereafter, the "Superintendent" became the responsible head of each mill operation, and had no higher title until 1952. Madison had more superintendents than any other mill. It was the place where new superintendents often started and old ones sometimes ended. There are no records on salaried employees who were not on the payroll in 1913, but the list of Superintendents which follow, put together from many sources, is believed to be substantially correct.

February, 1899 - Early 1900	A. Ledyard Smith
Early 1900 - October, 1901	George S. Witham
October, 1901 - April, 1903	George W. Welch
July, 1904 - Summer, 1905	George S. Witham
December, 1905 - October, 1906	Ingleton "Ing" Schenck
1906 - 1908	J. H. Houghton
December, 1908 - September, 1912	Ralph "Cap" Lewis

September, 1912 - June, 1914	Melvin C. Adams
June, 1914 - February, 1918	Charles H. Burr
February, 1918 - September, 1928	Ingleton Schenck
September, 1928 - October, 1929	Frederick W. Mears
October, 1929 - June, 1947	Henry L. Hall
June, 1947 - March, 1952	C. Neal Merrill
March, 1952 - July, 1955	Lothrop B. "Chub" Bartlett

A. Ledyard Smith (1862 - ?), who had come from Wisconsin to Madison as General Manager of the old Manufacturing Investment Company, and had carried over into Great Northern, was a native of Salem, Massachusetts. He was given the title Assistant to the President in 1899, but remained at Madison until as late as 1906. His position in relationship to the actual management of the mill is unclear. He is mentioned as being involved in the construction at the lower power in 1901-2, and it is possible that the early Superintendents reported to him, although the Company had a General Manager at Millinocket. He attended to legislative matters, and was a representative from Somerset County in the Maine Legislature of 1903. There will be more about him in other parts of this story.

George Witham was an engineer and inventor. In 1901, he became Superintendent of the Millinocket mill, and held this position for three years. For what reason he was sent back to Madison in 1904 is not known, but he resigned within a year to take a job with the Union Bag Company, and was later associated with the Sandy Hill Iron & Brass Works, pulp mill machinery builders. He is remembered by the writer only as in late life, a tall, thin,

white-haired man, given to odd conversational gestures with hands and fingers. Little is known of George W. Welch (1867-1903) except that he was a native of Cumberland, Maine; his salary as Superintendent of the mill was \$1,500 a year; and he was drowned in an accident on Embden Pond.

Ingleton Schenck (1860-1938) was Garret Schenck's brother, a slightly-built, active man, but with little of his brother's depth of vision. He is remembered more at Millinocket as a name than as a personality. This may not be quite fair, as he left Millinocket in 1918, and there are few remaining who knew him well. Although somewhat irascible, he was well liked by the employees at Madison, who called him "Daddy", and put up a huge banner with this on it at a farewell banquet attended by almost every man who worked in the mill. Ingleton Schenck started work with the Company in 1900, when he was 40 years old, as "Superintendent's Clerk" at the Millinocket mill, and was in charge of the sulphite operation at that plant before being sent to Madison, where he served an apprenticeship of one year, after which he went back to Millinocket as Superintendent of that mill, holding the position for eleven years. There is no record of why he was transferred back to Madison in 1918, but from the other moves made at that time it seems clear that it was because new blood was needed at Millinocket. The Madison mill did well during the early part of his regime, and conditions other than any fault in management contributed to declining earnings in his later years. However, he took orders only from his brother. He was 68 years old at the time of Garret Schenck's death in 1928, was not cooperative with the new management, and became a casualty of this situation in the fall of that year, his salary being continued on a declining basis

for three years. It is likely that J. H. Houghton was the same man who worked on the construction at the lower dam; a Boston engineer whose journal has given us the story of that development, but there is no information about him. Cap Lewis, (1866 -?), a breezy, mustached type, addicted to bat-wing ties, had been hired as Paper Room Foreman in 1906, at what mill is not known, but probably at East Millinocket. There is some indication that he may have been on Hardy Ferguson's engineering staff during the construction at Millinocket. He left Madison in a swap of Superintendents, in which he took over the East Millinocket mill, with Mel Adams, who had been Superintendent at East Millinocket, moving to Madison. Melvin Adams (1863 - ?), had come from Rumford Falls as a boss machine tender at the start-up of the Millinocket mill. He was Paper Room Foreman at that mill in 1904, and was made Superintendent at East Millinocket in 1907. The reason for his departure from Madison is unknown. The record says only "Left Employ", but his salary was continued for six months. "Charlie" Burr, of whom more in another chapter, was sent to the East Millinocket mill as Superintendent when Ingleton Schenck came back to Madison for the second time. Fred Mears (1889 - ?) had joined the Company as an apprentice in the old Bureau of Economy in 1916. He was Assistant Superintendent at Millinocket when he was put in charge of the Madison operation, and it was under his supervision that No. 2 machine was shifted to the making of sulphite specialty papers. As soon as this program was under way, he was transferred to the Sales Department as a salesman, with the duty of developing business in the new products.

Henry L. Hall (1889 - 1957) was a descendant of Ebenezer Hall, the first white settler on Matinicus Island, victim of an

Indian attack in 1757. He joined the Great Northern Paper Company as an apprentice in the Bureau of Economy in 1918, after having taught school for some time; resigned within a few months, and was re-employed in 1920 as a Chemical Engineer. In that same year he was made Assistant to the Superintendent at the East Millinocket mill and in 1924 went to Madison as Assistant to the Superintendent there. He was a man of the highest integrity, dedicated to the service of the Company. Of stocky build, slow-spoken, stubborn, reluctant to delegate responsibility, sometimes unreasonable, he was nevertheless well liked by his people and respected in the community. He was never in great favor with the President, William A. Whitcomb, who called him "the schoolteacher", and because of doubts about his capacity, he was, after Fred Mears' transfer, required to run the mill in acting status, without change of title, until the spring of 1930. Despite this inauspicious start, Henry Hall managed the affairs of the Madison mill longer than any other superintendent, through the great depression and World War II, often under conditions which would have had a more volatile man climbing the walls. Afflicted with Parkinson's disease and in failing health during his later years with the Company, he insisted upon carrying on his duties much longer than he should have, and finally had to be relieved by his Assistant, Neal Merrill, in the fall of 1947. He continued to hold the title of Superintendent, though inactive, until July 1, 1948, when he was put on leave of absence and six months later was retired.

Neal Merrill (1895 - 1970) was made Acting Superintendent in November, 1947, and became Superintendent in June, 1948. He was

transferred from Madison to take over the East Millinocket mill, and there will be more about him in connection with that plant. Chub Bartlett (1903 -) also joined the Company as an apprentice, in 1925, served a short time as Resident Engineer at Madison in the late 1920's, and was Assistant Superintendent at East Millinocket when in 1951, he was moved to the Boston office, with the title Manufacturing Department Engineer. In the shuffle of management that followed the advent of the new President in 1952 he went back to Madison as Mill Manager, the new title established at that time for what had been the position of Superintendent. When the mill was sold in 1955, Chub Bartlett elected to stay with it. This did not work out well, and after a short interlude with the St. Croix Paper Company division of Georgia-Pacific he was re-employed by Great Northern in 1962 as a Process Engineer in the Millinocket organization. In 1967, he was again moved into a staff position, with the title Technical Staff Assistant which he held to retirement.

In general, in these brief notes, all information readily available is given on those men who ended their service with the Company at Madison. Those who were transferred to other operations will be discussed at more length in other chapters. There is a short unexplained hiatus in Superintendents between April 1903 and July 1904, but it is almost certain that A. Ledyard Smith was still there during this period. Another gap, in the fall of 1905, is probably due simply to lack of official record of change.

The status of the Great Northern Paper Company relative to the towns of Madison and Anson and outlying areas differed somewhat from that at Millinocket and East Millinocket. The Madison

mill did not represent the only substantial industry in the area; it did not bear so large a part of the tax burden as in the other communities, and its presence did not exert so much influence.

If there was ever any friction between the Company and the community, it had been forgotten before the writer's first association with the place in the 1920's and relations after that were always amicable. The pressure for the Company to participate in local projects was not as great as in the other towns, but it did its share, and in addition always scrupulously allocated a proportion of its contributions to charitable fund drives and the like on a rough per ton of production basis which usually favored Madison a little. In 1924, the Company made a direct contribution of \$10,000 toward the cost of a new \$62,000 grade school in Anson. It had donated land for this school and a playground in 1916, and in recognition, it was named the Garret Schenck School.

The Company owned a number of small dwelling houses on Kennebec Street in Anson, close to the power station. There seems to be no record available as to when these were built, nor for whom they were intended when built. They probably came with the Manufacturing Investment Company purchase as there were "cottages and tenements" in the consideration. In the other mill towns, the policy, established very early, was to avoid the business of owning homes and renting to employees, but for some reason it did not apply here. These houses were rented at very low rates, and to justify the low rent were allowed a minimum of upkeep and improvement. There may have been as many as seventeen of these homes in this group at one time, but several were apparently demolished when the Anson Station was built, and four were bought at

different times, mostly late in the game, by the people who lived in them. At the time the mill was sold, nine of them and some in other locations were still owned by the Company.

Of passing interest is the fact that while in the early days there were several hotels in Madison, the situation as regards public accommodations had deteriorated by some time before the 1920's to the point where the Company for a period of years rented and maintained a couple of rooms in a private home for the use of its visiting personnel. It is not known just when this arrangement was discontinued, but as it is recalled, it was during one of the economy drives of the depression period.

The negotiations which led up to the sale of the Madison mill of the Great Northern Paper Company were the result of a reverse twist to an approach made by the Hollingsworth & Whitney Company. Our information is partly hearsay, but is believed to be substantially correct.

Because of changes in the nature of their product, this company's groundwood mill on the lower power had become of little importance to them, and in the early 1950's it was in only partial operation. After at least one unsuccessful attempt to dispose of it to the Central Maine Power Company, James Madden, President of Hollingsworth & Whitney, offered it to Great Northern. This was in the summer of 1954, after it was pretty well known that the Madison mill was definitely up for sale, and might seem to have been a rather futile gesture. However, the Hollingsworth & Whitney people knew that much of Madison's trouble stemmed from lack of power; they had supplied considerable amounts of groundwood pulp to it from time to time; the installation of a connecting pipe

line for this purpose had been discussed, and the idea was that Great Northern might latch on to this offer as a means of saving the operation. There was merit in this, of course, although Madison had troubles other than a power shortage. Roy V. Weldon, the Company's Executive Vice-President, had the matter in charge, and while the price being talked about was higher than Great Northern was willing to consider under any conditions, the offer was not summarily dismissed, but was stirred into the mixture of ideas swirling around at that time.

It just so happened that right at this point there was a body of opinion within the Board of Directors that the Company had accumulated too much timberland, and that some of the value which it represented should be converted into cash to be used toward the cost of the expansion at East Millinocket. Nearly 100,000 acres of this land was in the Kennebec watershed, so located that wood from it was unavailable to the Penobscot mills at any reasonable transportation cost.

With the door open to negotiations of some kind, it would have been strange if something unusual did not come out of this set of circumstances, and it did, in the form of a counter-offer by the Company to sell the Madison mill to Hollingsworth & Whitney, along with a substantial block of Kennebec timberland. This last was bait, but coming from the Great Northern Paper Company, was about as startling as an offer by the United States Government to sell the White House, and could hardly be ignored. Hollingsworth & Whitney took it under advisement.

The matter remained open on a refusal basis during the negotiations which led to Hollingsworth & Whitney being taken over

by the Scott Paper Company on October 27, 1954, and for some months thereafter. Scott wanted the land but not the mill, and the Company would have none of that, so Scott set out to find a buyer for the mill property. This turned out to be the Economy Corporation, a holding company owned by Louis Calder, Sr., President of Perkins-Goodwin Company. On February 3, 1955, the Great Northern Paper Company gave Scott Paper Company a formal option on the mill and timberlands in Somerset and Franklin Counties, good until May 31st and then to June 10th. On June 9th, they advised Great Northern that they had made an arrangement with Economy Corporation as to the division of the property and the sale was announced publicly about a week later. In the meantime, Roy Weldon and M. C. McDonald, dealing directly with Economy, had come to an understanding on matters relating to agreements in effect and to the welfare of the employees of the mill. The situation was explained to and accepted by representatives of the union locals, who were in process of negotiating a new contract; title search was completed, and on July 5, 1955 a three-way sale and purchase agreement was entered into between Great Northern, Scott and Economy.

Under this agreement, Scott Paper Company acquired the Company's interests in land in Crockertown, Mt. Abram, Kingfield, Jerusalem, Caratunk, Dead River Township, Flagstaff Township, Pierce Pond, T.4 R.9 and lots along the river in Madison and North Anson, all from the timberland inventory, for the sum of \$500,000. The Economy Corporation bought the mill, dam and Anson power station; the Superintendent's and Assistant Superintendent's houses in Madison; thirteen other houses in Anson and North Anson; Weston Island, with various river and shore rights for booms and

and piers; the Company's interest (20/339ths) in the Brassua storage, and, from the timberland inventory, the Company's interest in land in Tomhegan, Taunton & Raynham, the Rockwood Strip and the Sandwich Academy Grant, for \$2,000,000. Both transactions were for cash.

Economy Corporation took over the Company's various agreements and contracts, including the labor agreement and insurance and pension plans, the Company making special provision on its own account for a number of the older employees. As has been noted, some of Madison's supervisory people had already been moved to the other mills. At this time, the two companies sort of chose teams from the remaining management and supervisory personnel, the Company being allowed to offer jobs at the other mills to selected individuals. This caused some grief, some of those picked by the Company electing to stay with the mill and some who did not have the choice being resentful of the fact, but this was transitory.

The Madison mill officially passed to the Economy Corporation at 8 A.M. on July 11, 1955. Most of the Company's local records were turned over to them, as were drawings and other material from the Engineering Department files, although odd file folders and miscellaneous documents, mostly duplicates, were turned up much later. Earlier in this story, it was noted that the Madison mill office was used as storage for transfer files from Great Northern's head office in Boston. When the Boston office organization was moved to Bangor in 1954, the bulk of the Boston archives, and these were voluminous, were sent to Madison. At the time of the sale, one of the members of the former Boston office staff

was sent to Madison to cull these records, and he, unaware of the historical value of this mass of material, consigned much of it to the shavings fire in the boiler house -- a sad loss to this story.

Under the new ownership, the mill started operations as the Economy Corporation, but within a short time was set up separately as the Kennebec River Pulp & Paper Company, with Louis Calder, Sr., President and Louis Calder, Jr., Executive Vice-President. On October 4, 1961, the Kennebec River Paper Company bought from Scott Paper Company the old Hollingsworth & Whitney groundwood mill which Great Northern had started to build sixty years before on the Fishing Falls, and the wheel had turned full circle.

APPENDIX I

Notes -- Chapter IX

- (1) Clark
- (2) Ibid
- (3) Ibid
- (4) Ibid
- (5) Ibid
- (6) Smith
- (7) Clark

APPENDIX II

Reference Bibliography - Chapter IX

Emma Folsom Clark: "History of Madison". Compiled in collaboration with William and Violet Cassidy, Marguerite B. Hurd and Blanche Wilma Look. 1962. Knowlton McLary Co., Farmington, Maine. Author's Note: It is our understanding that this history was written in the expectation that the Town of Madison would provide funds for publication. When it did not, Mrs. Clark, who died before 1960, left the manuscript to a friend or relative, with the stipulation that it was never to be published. In that year the writer was allowed to excerpt such passages as referred to the Great Northern Paper Company. It has since been published, under what circumstances we do not know.

David C. Smith: "Lumbering in Maine 1861-1960". University of Maine Studies, No. 93. University of Maine Press, Orono, 1962.

Author's Note: Information in this and other chapters was taken from the typescript of this work, several years before publication, and while the writer has tried to make sure that it appears in the published edition, there may be some discrepancy.