GEORGE MADISON HINKLEY
SAWMILL ENGINEER FOR E. P. ALLIS

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In 1905 the American Lumberman at the death of George M. Hinkley, honored him with a special article. He was "among the men who had done much to elaborate and perfect saw mill machinery." His contribution to sawmilling was widened when "fortune cast his lot with one of the largest machinery manufacturing houses in the country or the world," Edward P. Allis and Company. The career of G. M. Hinkley, master sawmill designer and builder, cannot be separated from that of E. P. Allis, whose Reliance Works in Milwaukee, Wisconsin, manufactured the machinery that made Hinkley famous among lumbermen.¹

Edward Phelps Allis (1824–1889) was a New Yorker who turned from the study of law to go West to seek his fortune as a businessman. By 1873 Allis had established himself as a leader in the Wisconsin business community, had purchased and expanded the Reliance Works founded in Milwaukee in 1847 by Decker and Seville, and employed more than 300 men and apprentices. Millstones and mill supplies, along with castings and engines, were the principal products. Although sawmill equipment had been listed in the catalog for some years, it was no more than a minor line.²

Allis developed a technique of management that made him the largest manufacturer in Wisconsin in the late nineteenth century. "It has been Mr. Allis' policy to secure the assistance of the best specialists in the different lines of machinery manufacture, and thus turn out the best machinery made, to which is due in a large measure his great success," reported an observer.³ Allis brought together the engineering talent for the production of goods and the financial support to secure the constant expansion of his works. It was up to his engineers to provide the excellence of product and efficiency in production that would yield profits.

In 1873 Allis invited George Madison Hinkley to become head of the Reliance Works' sawmill department. Hinkley was one of the men who made up an engineering triumvirate which would lead

¹ American Lumberman, December 23, 1905, p. 1.
³ Sentinel, January 2, 1889.
Allis and the Reliance Works to international fame and financial success. The second major appointment was that of William Dixon Gray to head the flour milling department. E. P. Allis rounded out his staff of brilliant engineers by securing in 1877 the services of Edwin Reynolds, who became the great steam engine builder of the late nineteenth century. The American Society of Civil Engineers, which had invited Allis to become a Fellow in 1883, published this appraisal of his successful business technique: "Mr. Allis was not an engineer, not an inventor, not a mechanic, but he had in full measure that rare talent for bringing together the work of the engineer, the inventor, the mechanic, that it might come to full fruition, and the world at large be the gainer thereby."

The achievement of Edward P. Allis was based on the success of Hinkley’s sawmill equipment, Gray’s flour milling inventions, and Reynolds’ steam engines, which powered the sawmills and flour mills. As it turned out, E. P. Allis could not have picked better men than Hinkley, Gray and Reynolds.

Allis and his engineers could hardly have lived at a better time. After the wreckage of the depression of 1873 had been cleared away, the United States very rapidly developed to maturity as an industrial nation. From an economic point of view the period 1873 to 1893 was in some respects a golden age of American history. During this period the public debt was rapidly reduced, even though taxes were low. The federal government was usually more concerned with a surplus than a deficit. Gradually, after the violent shock of civil war, the spiritual unity of the nation was restored. Manpower resources were unlimited as young and ambitious Europeans settled in cities and on farms. Inventions of all kinds added greater comfort and convenience to daily life. But most of all, there was a consciousness of progress, development and growth which made possible an optimism in American life that has perhaps never been so great.

E. P. Allis was always alert to business possibilities. The lumber industry, found in his own back yard, presented a remarkable opportunity. Given the enormous stands of accessible timber, Allis might almost have anticipated that between the Civil War and 1890 the principal center of the lumber industry would be the Great Lakes region. In fact during that period Michigan and Wisconsin accounted for nearly 30 per cent of the national production. During the decade following Hinkley’s appointment as manager of the sawmill department, the quantity of white pine sawed annually in the Great Lakes area was to double, increasing from roughly four
billion to eight billion feet. Moreover, the industry was soon to develop in the West and in the South. During the decade of the eighties the total value of the product was to increase from $210 million to $404 million. Supplying the rapidly expanding lumber industry with equipment represented an enormous opportunity.\(^6\)

The change that Allis must have noted was that sawmill methods during the previous decade had been undergoing a rapid development. Introduction of the circular saw increased cutting capacity more than ten times, although early circular saws were exceedingly wasteful, sawing out at each cut a half inch of kerf. The movements of the log carriage had been accelerated and the double edger and later the gang edger had been introduced. At the close of the sixties steam replaced manual labor in handling logs. These and many other lesser improvements were accompanied by the increasing efficiency and power of the driving engines. In short, the better sawmill of 1870 bore little resemblance to the mill of 1860, and was still improving.\(^7\)

Hinkley, born in Seneca, New York, May 24, 1830, was appointed head of Allis’ sawmill department in October, 1873. As a young man he had recognized the great future in the lumber industry and increasingly aware of his growing taste for mechanical work, decided to learn the millwright trade. His first effort in this new occupation was in 1851 on a mill at Zilwaukee, Michigan. He then worked on mills at East Saginaw and Thetford, Michigan, and one on the Flint River.\(^8\)

The Civil War broke out while Hinkley was operating a shingle mill in Tuscola county. On September 11, 1862, he enlisted as a corporal in Company 1, Sixth Michigan Calvary, and was mustered into service on October 11, 1862. On May 6, 1864, Hinkley, now a sergeant, crossed the Rapidan with General Grant and on June 11 he was captured by the Confederate forces during the battle of Trevellian Station, when his horse was shot from under him. As a prisoner he was confined in Confederate prison camps, including Andersonville, until he was paroled in late November, 1864.\(^9\)

After the war Hinkley was kept busy building mills; first the Farr mill at Muskegon; then a mill at Manistee; and in 1866 a shingle mill in Milwaukee. After its completion, John Eldred, the owner, engaged Hinkley as the operator. In 1870 Hinkley decided

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\(^7\) Frederick Merk. Economic History of Wisconsin During the Civil War Decade (Madison, 1918), pp. 69–71.
\(^9\) History of Milwaukee, Wisconsin (Chicago, 1881), p. 1388. Allis-Chalmers Sales Bulletin, December, 1905, p. 1. Hinkley kept a diary during the Civil War. Although the original has been lost by the family, portions of the diary in typescript are in the files of the Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin.
to develop his ideas for improving sawmill machinery and to establish his own business. He invented and sold a saw swage, a mill lathe and other devices which Filer and Stowell, sawmill manufacturers in Milwaukee, produced for him. His worth and his potential as inventor and engineer moved E. P. Allis to hire him for the Reliance Works.\textsuperscript{10}

Upon joining the Allis company, Hinkley contributed his sense of organization, his drive, his inventiveness and his engineering abilities. Actually his productivity in new sawmill devices had just begun, for during the 32 years that he was head of the sawmill department he patented 35 inventions.\textsuperscript{11} So that Allis might secure not only the services of such inventive minds as Hinkley, and later Gray and Reynolds, but also keep them in his organization, he allowed departmental managers to hold all or part of their patents, as well as those of their departmental co-workers. The company then paid the managers for the use of their patented devices. Moreover, the name plates on machines and company catalogs frequently featured the name of the department head, thus giving him international recognition.\textsuperscript{12}

When George Madison Hinkley came to the Reliance Works, the annual sales of sawmilling equipment had not reached $1,000. Hinkley poured all of his talent and energy into his job. At the outset he did all the drafting, traveled, and carried on the correspondence. Most of the machinery turned out was under Hinkley’s patents and his genius was such that some of the mill appliances invented by him were manufactured and used in mills without marked change for two to three decades afterward. As the reputation of the Reliance Works and of Hinkley’s inventions grew, so did the sales of sawmill equipment.\textsuperscript{13}

Logging was a rough, tough business in the late nineteenth century and the sawmill owners were a hard-bitten lot. It took a particular type of person, besides the quality of the product, to sell effectively to them. Hinkley was known for his commanding bearing, his forceful manner and pungent speech. A fine beard added to his impressive appearance. His outbursts were considered classic. One sawmill man vividly remembered his “highly scientific and gifted knowledge of picturesque language.” Once when something

\textsuperscript{10} American Lumberman, December 23, 1905, p. 1.
\textsuperscript{11} W. H. Whiteside, President of Allis-Chalmers Company, Circular Letter No. 62, December 20, 1905.
\textsuperscript{12} The Sentinel, February 29, 1888, notes that a patent was granted on a sawmill carriage, one-half to George M. Hinkley and one-half to E. P. Allis and Company. The contract, in Allis-Chalmers files, between William W. Allis, President of Edward P. Allis Company, and Edwin Reynolds, April 9, 1890, reaffirmed his previous contract, which gave him full right to his patents. Ernest C. Shaw, who knew G. M. Hinkley well, understood that Hinkley held the same rights to his patents as did Reynolds and also some patents of departmental co-workers. Edward P. Allis and Company Catalog, 1885.
\textsuperscript{13} American Lumberman, December 23, 1905, pp. 1, 37.
had gone wrong, Charles Allis, the third oldest of the Allis boys, rushed out of his office to suggest less profanity, only to give up when G. M. Hinkley furiously expanded on his original statement with even greater force and added that he would "kow-tow to nobody!" But he understood the loggers and sawmill owners and could speak their language. Here was a man who knew what he wanted and had the courage and ability to go after it. Hinkley employed no tricks of salesmanship but sold the products of the Reliance Works solely on their merits, "recommending them for the value that was in them, and of that value and its most minute details no man ever had more intimate and thorough knowledge."

When George M. Hinkley assumed management of the sawmill department, the company produced only a circular saw which was described as a fast-running disc "with teeth on its periphery." Only two years after Hinkley joined the Reliance Works, the catalog of the sawmill department was increased to a fat 70 pages. Hinkley's patents, together with his ingenuity and energy, had made the difference.

In 1876, three years after joining the Allis Company, Hinkley sent his first complete sawmill to Japan, and filled many larger domestic orders as the reputation of the department continued to grow. In the spring of 1878 ten carloads of sawmilling equipment were sent to Texas, including two large double sawmills, setworks, engines, boilers, and everything necessary for a complete outfit. Later the same year the Sentinel reported that "in the matter of sawmills the reputation of Messrs. Allis & Co. stands alone."

In the hard-fisted and free-wheeling sawmilling business a less energetic man than Hinkley and a smaller concern than the Edward P. Allis Company would have had difficulty maintaining the identity and integrity of its patents. The mechanical "dog," the device to hold the log in place on the log carriage, was of critical importance. In 1880 the Allis Company brought suit against Filer, Stowell and Company for infringement of a patent dog used in sawmills. Allis and Hinkley sought to recover royalties from all firms that had manufactured or were using their patented device to the extent of $600 to $800 for the use of the dog during past years and recognition of rights in the future. When the Allis position was sustained by the courts, the lumbermen of Oshkosh, Wisconsin, formed the Northwestern Sawmill Protective Association to defend themselves against an additional Allis claim of 25¢ per
1000 feet of lumber cut by mills using its devices if not manufactured by the Reliance Works. The decision on this claim was in favor of the Allis company and a referee was appointed to determine the extent of the damages. Allis and Hinkley continued to press their claims against a growing list of firms and lumbermen. The first case, against Filer, Stowell and Company of Milwaukee, was settled in 1883 when that company agreed to pay for past infringement and take out a license from E. P. Allis and Company covering future use of the patent. This action provided the principle for settlement of the remaining cases.18

At the fairs and exhibitions popular after the Civil War manufacturers of all types entered their products in competition for prizes and to widen their markets through the education of the public. Hinkley supervised elaborate displays of Allis sawmill equipment all over the country during the seventies and eighties. The progress made by Hinkley in developing a first class sawmill department can be seen in the impressive collection of prizes awarded his sawmill equipment at the New Orleans World’s Fair of 1885. For a circular sawmill in practical operation he was awarded a medal of second class; headblocks in operation with circular sawmill, medal of second class; collective display of sawmill machinery, medal of second class; gang edger, medal of first class; automatic lumber trimmer, medal of first class; two-saw lumber trimmer, honorable mention; flooring machine, medal of first class; for the Reliance mill dogs, operated with circular saw mills, medal of first class. This record becomes more impressive when it is compared with those of two other Milwaukee manufacturers who also entered their equipment at the New Orleans fair. Filer, Stowell and Company received honorable mention for its display of mill machinery, and the T. H. Wilkin Company a medal of first class for its saw stretcher. G. M. Hinkley’s sawmill department was obviously helping to establish the national and international reputation of the Allis company.19

Although Hinkley did not invent the band saw, he is given credit for perfecting it.20 This was a machine carrying a saw made from an endless steel band with teeth on one edge running over two flat-faced wheels, one above and one below the level at which the log was sawed. The great advantage was that the steel band was one-half the thickness of the old circular saw and reduced the waste from sawdust proportionately at every cut. When Hinkley

18 Sentinel, August 16, September 27, 1880; January 29, 1881; October 4, 1882; March 22, September 2 1883.
19 Sentinel, May 23, 1885.
was convinced that the band saw could work a great advantage, he proceeded to perfect it.\textsuperscript{21}

With his characteristic skill and energy Hinkley pushed the development of the band mill. His first band mill was announced on December 6, 1885, in a notice entitled "TO THE ATTENTION OF LUMBERMEN."

We have just completed our new band saw mill, which is without question, the best machine of its kind ever offered to the market. One of these mills is now set up at our works, corner of Florida and Clinton Streets where it will remain on exhibition until December 15. It will then be removed to Dorchester, Wisconsin, and placed in active operation about January 1 in the mill of the Jump River Lumber Company. We make this announcement in order that parties interested in band saw mills may have an opportunity to inspect our machines.\textsuperscript{22}

This was a nine-foot mill designed for saws ten inches wide. The lower wheel had a cast-iron rim on the outside of which was bolted a hardwood rim. The weight of this lower wheel was about 3,000 pounds. The top wheel was constructed almost entirely of the best seasoned hardwood to make it as light as possible and at the same time perfectly rigid.\textsuperscript{23} Soon after the new band mill was placed in operation at the Jump River Lumber Company, Prentice, Wisconsin, the E. P. Allis Company received the following letter:

Your combined Band and Rotary Mill put in for us was started up about the first of February last. It started off perfectly and our satisfaction has been constantly increasing. We are cutting from mixed logs, knotty, frozen, shaky and sound, at the rate of 3,000 feet per hour, of measured lumber, requiring no more care than a circular mill. We expect with a little more familiarity with operating the mill, to saw 35,000 feet per day. We have examined other mills in operation and unhesitatingly say we have seen none that compare favorably with this one. We cordially recommend anyone desiring a mill to examine this one in operation.

Jump River Lumber Company\textsuperscript{24}

Although the later development of the Hinkley Automatic Power Swage and the Hinkley Power Guide, along with his other numerous inventions, rounded out his contributions to the sawmill industry, it was the perfected band saw that the \textit{American Lumberman} regarded as "the monument of his rare genius and mechanical ability."\textsuperscript{25}

\textsuperscript{21}Ernest C. Shaw to Alberta J. Price, August 23, 1854. Allis–Chalmers historical files. It was characteristic of all the sawmill developments of the sixties and seventies that they were calculated to secure increased output or a saving of labor. Little effort was made toward achieving a saving of timber which was both cheap and abundant.

\textsuperscript{22}Sentinel, December 6, 1885.

\textsuperscript{23}In the \textit{Southern Lumberman}, December 15, 1931, p. 82, E. A. Hall, then manager of the milling machinery department of Allis–Chalmers, provided details on construction of the mill.

\textsuperscript{24}Jump River Lumber Company, undated letter in Allis–Chalmers historical files.

\textsuperscript{25}American Lumberman, December 23, 1905, p. 1.
It is significant that Hinkley lived and produced his equipment during the period of greatest lumber expansion, when every manufacturer of sawmilling equipment was pushed to the utmost to meet both the great demand and the intense competition. At his death in 1906 the American Lumberman paid him tribute:

Mr. Hinkley was as great a man in his line of business as Carnegie in his. He has been as useful in his day and generation, in view of the circumstances which surround him, as any great inventor whose name could be mentioned. His relation to the improvement of saw mill machinery was almost akin to that of Edison to electrical development or of Ericson to the evolution of naval construction. Had he so elected his name would have been as eligible to enrollment in a national hall of fame as any of those cited. But he chose—if he gave that matter a thought—that his works should be his monument.

Hinkley distinguished himself within the company well beyond his ingenuity as an inventor and machinist. It was the business ability of George Madison Hinkley that E. P. Allis prized equally highly. With the management and the sales of the department wholly in his charge, he raised the status of his department to the first rank in the field and annual sales to nearly $400,000 by 1889 when Allis died. Hinkley had vindicated the business technique by which E. P. Allis operated and whose fortunes, in part, were created by him.

26 Ibid., p. 37.
27 After more than 32 years of service to the company as manager of the sawmill department, G. M. Hinkley died on December 14, 1905.