

kids are workin' when they're young. You know they did it all over the world. Why in the hell did they make a god damned law like that?

"If you have your own sons or grandsons why couldn't you let 'em work and learn somethin'. Am I right?"

"You are right, Gramps!"

"Well, look at you. You're workin' for me and you're only fourteen. What the hell? You're learnin' how to do somethin' with your hands. You're learnin' how to get things done. How to work and produce.

"Do you know somethin', Rusty? If you learn how to do somethin' you'll always survive! You'll never have any trouble in this world because you can always turn your hand to anything. I'm talkin' about practical knowledge, not education.

"If you know how to work and lay things out, you can always survive. But do you know that during the Great Depression, these lawyers and doctors, they all committed suicide. The educated guys didn't know how to do a god damned thing! They all committed suicide, right down in California!

"People better think that way because it's going to happen again. If it happens again, they'll be thousands and thousands of 'em that don't know how to survive because they'll be helpless. If you can go out and do somethin', you ain't helpless. If you can go out and dig and be tough, you're never goin' to lose. I've been that way all my life. I've been

that way all my life. I've been brought up that way.

"If you have a high education, those guys don't know how to do a god damned thing. They don't know about ordinary things. These god damned politicians, they don't know how to do anything either, and they're runnin' the country. Understand that? Son of a bitch, if I was boss, I'd teach 'em how to do somethin'!

"I got a little clam beach down here and I can go out and catch some fish and eat 'em, if I were hard up. I got the land and I got the waterfront. I can go out there and set a net for crabs or get some kind of somethin' and survive. Got to have somethin' to eat or you ain't goin' to live. I could raise some spuds here and some corn and anything."

I let Gramps finish with his digression instead of interrupting him and returning to his personal narrative of his shipbuilding days. When he had settled back down and was more relaxed, after having another drink or two, we proceeded.

"Why do not you tell me about the time you worked on the Clallam and the Jefferson? What did you do on them?"

"Just worked on 'em is all!" Gramps answered as he thought about my question for a minute or so.

"Were you still an apprentice in those days?"

"I was still learnin'. I hadn't learned everything there was to know by then. I was still an apprentice or a helper as we called 'em in those days."

"What did you learn when you worked on the Clallam? I continued prying answers out of Gramps about what he was actually learning during his early apprenticeship.

"Learned to hang knees from one of the experts on the Pacific Coast, by the name of Graham. He was an artist. We used to work in partners and I was his partner. I could hang more damned knees than any bastard when I got through with him. How 'll that be? He showed me how to do it. I could beat any son of a bitch in the country hangin' knees because I learn't from an expert. I hung eight or ten knees a day on the Clallam and all the other bastards couldn't hang four of 'em a day. I was workin' with the guys that knew how to do it, and they liked to work with me because I was a hard workin' son of a bitch and they wanted to show me all their tricks."

"What is the secret to hanging knees?" I asked, hoping to learn one of Gramps's secrets about shipbuilding.

"Jesus Christ, hangin' knees is simple as hell, but you've got to know how to go about it. That goes for anything you do on a ship! You've got to know how to lay things out and how to apply it. Some of them monkeys fiddle away and they don't know how to scribe a knee or any other god damned thing."

"But what is the secret?" there must have been some technique Gramps had discovered in order to become a master knee hanger.

"All right! You've got to scribe the knee and fit it to

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the overhead beam. Then you scribe it to the shelf and all the way around. Then, you take your adz and your slick and you merely follow that line. Put it up there and put a spike in the heel and in the toe. It just fits, you couldn't put a pin between the joint. Understand? That's how good it had to be in those days!"

"That is pretty good, Gramps! What else did you learn when you worked on the Clallam?"

"Oh, I was layin' deck on her."

"Was not the Clallam the boat that sunk off Vancouver Island and everybody was lost?" I asked. In those days, I was reading about the history of Puget Sound in school and I remembering discussing this terrible shipwreck.

"About a year after she was launched, she ran into a gale in January in the Straits. They blamed the engineer because he didn't keep the pumps goin'. Hell, they lost over fifty women and children in that one," Gramps explained as he took another swallow from his glasss.

"Were you at the launching?"

"Well, hell yes I was! I helped build her. We was still workin' on her when she was launched."

"Could you describe the launching? They say that the girl who was supposed to christen her, completely missed the bow with her bottle of champagne and they raised the National Ensign upside down. According to superstition, this was sup-

posed to spell doom for the ship! Do you remember all that?"

"The girl that christened her was from Clallam County.

It went so damn fast down the ways that she didn't have a chance to christen the ship. She was launched sideways and she dropped about five feet to the water. She went down so damn fast, on them steep ways, that when she hit the water she just stopped. It was like hittin' a rock. She hit so hard that you could hear an echo back and forth across the bay for quite a bit of time. It made an awful bang on the water. Made an awful noise. That was the only boat I've worked on that was launched sideways.

"She hit so damn hard that it was almost like hittin' a rock. The force was so great that it sprung her and she stayed that way. The bugger had a big bend in her on the in-board side. When she hit the water, in the middle, both ends swung and bent out. One side, the port side, was caved in eighteen inches and the opposite side, the starboard side, opened up. She bent and she opened up the seams and butts."

"What caused that? I mean a lot of ships have been launched sideways with no apparent damage to the hull?"

"She had to drop a such a steep angle and besides, we didn't have all the deck laid yet. They was in too big a hurry to get her in the water, so we had shores and wedges supporting her inside because we didn't have all the deckin' on her. She had all the beams and knees in her, though.

"You see we hadn't finished decking the port side when they launched her. The decking was in the process of being laid, underneath on the main deck as well as on the top passenger deck. In order to stiffen her up for launching, we tied her together with shores and wedges.

"When we went back the next day to finish decking her, we noticed the curve in her. The foreman told us to keep our mouth shut. The whole gang didn't say anything and we went to work on it as fast as we could. Nobody never told anybody about the spring in her hull. And I never told anybody about it until after she sunk.

"She was in that bad storm I told you about and she probably had that weakness and maybe some of the oakum worked loose when she was in a seaway. Because she was leakin' so damn bad, they couldn't keep her pumped out and they blamed the engineer."

Apparently after the Clallam was launched, Heath moved his shipyard down the Puyallup River so the next ship they began to build, the Jefferson, could be launched endways near a curve in the river.

While working with Heath, Gramps not only learned how to hang knees and lay decking, but he also worked with the Old Man on the mould loft as he had done in Everett when he and Heath had made the moulds for the barkentine Aurora. Gramps would scribe them and broad nail them together, fair them up, and

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put all the bevels on them.

Not only did Gramps work the normal six day week, but he also worked on Sundays as a watchman in order to earn a little extra money. He needed the money to buy material for the boat he was in the process of designing and was planning to build, a forty-foot cutter he named the Manzanita.

At nights he would study books on shipbuilding principles, naval architecture, and design theories. He drew sketches, carved scale models and made half hull in order to discover the secrets of naval design. It was during these evening hours that he began his design of the Manzanita and soon ran into a stone wall. He was close to unlocking the secret of shipbuilding, but he had not discovered the way to true his lines and prove them fair.

"I knew there something I didn't know. On Sundays, I would help Heath lay battens on the loft because I wanted to find the secret in order to finish my design at home. I knew what I was lookin' for!

"One Sunday, while I was helpin' 'em lay out, I said, 'I see the whole secret now! I understand the reason for the whole damn thing!'

"Heath looked around at me on my hands and knees and said, 'You know too god damned much! Get your ass out of here!'

"I was a fool to say that in front of him, but I found what I was after and didn't know enough to keep my mouth shut!"

"What was it that you discovered? What was it that became so obvious that afternoon?" I asked excitedly.

"Diagonals! I found out how to fair things up by the use of diagonals. You see, when you design a ship with curves it might be off a little here or off a little there. Diagonals are lines that are perpendicular to the lines of a ship and are square off the curvature of the frames. You use them to fair up your curved lines and make them true.

"I needed to use diagonals in my drawing of the Manzanita. I learned the whole secret when I helped Heath use them to fair up the lines of the Jefferson. I found out what the hell I wanted to know and how the hell to do it. I'll never forget it because I learned the hard way. Nobody told me! I just discovered the reason why for the whole damn thing by myself. And when Heath heard me say, 'I understand!', he fired me.

"Monday morning, when I went to pick up my pay, Heath asked me where the hell I was going to go and I said, 'I don't know where the hell I'm going to go, but I'm not comin' back here again!' He never had guts enough to ask me to stay with him and I had the meanness enough to tell him to go to hell!"

"Then what happened?" I guessed that Gramps was probably stubborn enough to strike out on his own again.

"Then I went down to Aberdeen and worked with still another master builder by the name of Lindstrom. He'd been buildin' steam schooners down there since 1890 and was a real



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craftsman. He really knew ships! I was put to work hangin' knees and during the winter months we built a steam schooner called the Higgins Brothers and a tug for the Grays Harbor Pilots' Association called the Daring. When the tug was launched, I returned to Tacoma to start building the Manzanita."

"Did you figure out how to design her by then?"

"Of course! That's what I learned while workin' on the Jefferson. I found out how to do it and during the evenings in Aberdeen, I designed my first boat."

"How old were you then? You must have been pretty young!"

"I must have been about eighteen or nineteen years old. It was when Aberdeen was wiped out by a fire and burned the whole town to the ground. That was in the year of 1904. I was born in 1884, so I must have been nineteen or twenty when I designed my first boat."

"When you started building the Manzanita, did you work on it full time or did you have to work at a shipyard when you built her?"

"I began layin' the Manzanita out and built a small shed to build the boat under before I looked for another job. In them days, my brother, John, and I lived on the mud flats in Old Tacoma in a shack we had built and that's where I built my first boat. After I got her laid out, I went to apply for a job at Crawford and Reed. Wouldn't go back and work for

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Heath anymore because he insulted me.

"I kept goin' down to the yard every morning for about a week and applyin' for a job, but wasn't gettin' hired. He was hirin' some of these old guys with whiskers hangin' down to their chin and I got tired of goin' down there lookin' for a job.

"One day I said, 'What's a matter Mr. Reed? Why don't you give me a job?'

"And he said, 'You're too young!'

"I says, 'For what?'

"Reed looked at me and said, 'You're not the kind of guy I'm lookin' for!'

"I gets madder than hell and says, 'I've seen you hirin' guys here who wouldn't have a job in the shipyards I've been workin' in!' He didn't think I knew a damn thing, so I said, 'I'll tell you something, Mr. Reed. I'm not comin' down here anymore, but if you give me a chance to work a day or two for nothin' you can see the kind of work I do. If you don't think I'm any good, then I'll go. If you don't give me a chance to prove myself, that would make me feel bad.'

"So he said, 'all right! You come down to work tomorrow mornin' and I'll try you out!'

"Anyhow, I went down there and Reed looked at my tools and told me to go out in the yard and see the foreman, Mr. Johnson. After I found Johnson, he took me out to a 160 or

170 foot barge they was buildin' for Alaska to get the dope on some knees they wanted hung. We layed 'em out and cut them out on the bandsaw and I went to work hangin' knees.

"They sent me four, eight inch thick knees for the beams. Hell! I'd been through that before in Heath's yard and in Aberdeen. About eleven thirty I went up and asked him, 'What do I do next, Mr. Johnson?'

"He growled, 'Finish hangin' them knees!'

"I said, 'They're all hung!'

"He then asked, 'What do you mean they're all hung?'

"'They're all hung. That's what I mean!'

"Johnson said, 'I want to go out and see what kind of job you done!' So he and I went out and looked them over from one end to another and he finally told me, 'That's a wonderful job you just did! I'll send you some more knees.'

"He sent me four more knees and I hung eight knees that day. Fitted 'em like nobody's business. Meanwhile, they had two other guys workin' on the other side of the barge hangin' knees together. We was separated by a bulkhead that went through the middle of the barge and we couldn't see each other. The next day they took the other guys, who weren't hangin' as many knees as I was alone, off the job. I finished my side and hung all the rest of knees in the barge. How 'll that be?"

"That's fantastic," I complimented Gramps. And began to

realize just how arduous my grandfather was during his prime.

"I was the champion knee hanger in the yard at that time. They had me hangin' knees wherever they was any. And do you know what? When we finished all this god damned work, I was the last guy laid off! Well, that's somethin'!"

"You must have been a hard worker in those days, Gramps?"

"Had to in order to exist! Besides, I loved workin' on ships. Hell, by the time I went to work for Crawford and Reed, I had learned everything there was needed to know about ships and everything there was needed to know in the line of shipwork!"

"What else did they have you doing, besides hanging knees?"

"After they found out I could produce, they had me runnin' the plankin' gang because I had been doin' that too! When we finished the barge, we had a job buildin' the Zapora. She was a halibut, steam vessel about 160 feet long. When I was plankin' boss, we finished the plankin' in thirty days! How 'll that be? We worked like hell in them days and don't you forget it!"

I had asked Gramps to explain how they fastened plankin' in those days and according to him the planking crews worked in groups of three and each man carried a fifteen or twenty pound top mall which he could use proficiently with

either hand. One person would go to the steam box and retrieve a hot plank. He would then come running up the brow of a ship and spike the forward edge in position. A helper would run a line through ring staffs and eye bolts and thereby hold the tail end of their hot plank in toward the ship.

It was customary to have a ring bolt drilled through the keel and to have the ring end exposed on the bottom of the keel. Another bolt was bored through the wooden frames. A line was then run through these two fastenings so that the plank could be drawn tight against the frames.

Because the inside of the ship was usually planked and sealed off before the outside planking was fastened, they also drove steel dogs into the eight inch ship frames. Wedges were then driven between the plank and the temporary dog in order to drive the plank down into a position that forced it flush with the top of the previously fastened plank.

One worker would bore holes by hand and the other two would drive spikes with their top mallets. On every frame, two spikes were driven into the frame and two trunnels were driven through the ceiling on the inside. A trunnel is a piece of round wood about one and a half inches in diameter and approximately four feet long. It is driven through the six inch planking, through an eight inch frame, and through another eight inches of inside planking called ceiling. Once it is driven through the ship, it is then sawed off flush and split in the

middle. Finally, small wedges are driven in the middle of the split trunnel and the plank is secure.

Gramps kept busy hanging knees, supervising the planking crews, and laying decking for nearly a year and a half as the shipyard concentrated on building steamboats. In those days almost every ship of any size was a wooden, steam boat. Crawford and Reed built the 102 foot, passenger steamboat called the Dix and launched her in 1904, they built the hull of the 126 foot, passenger steamboat called the Monticello in 1905, and they built numerous other wooden vessels. Ironically, the Dix was involved in another Puget Sound tragedy as she collided with the steam schooner , three years later on her run between Seattle and Port Blakley and sank to the bottom of the Sound with twenty-six, trapped passengers aboard.

Gramps kept busy in the shipyard during the working day and during the evenings built his first boat within a year from the time he lofted her.

"I picked things up here and there to build it with," he was telling me one day. "I didn't have much money. All I had was twenty-five dollars saved at the time.. I bought a thousand feet of straight grain fir for twenty dollars, in those days.

"St. Paul and Tacoma Lumber Company had a mill about a block away from our shack on the mud flats. During the evenings, I'd take a wheelbarrow over and the watchman would pick the good pieces of 2x12 inch ends and stack them up for me. I took these

pieces and made frames out of 'em. My frames were chopped out with an axe and were overlapped. Double flitches we call it, two layers overlapping the other. I did it myself; layed it out and did it all by hand. Fashioned planks with an axe and a jack plane. I used to dub off the frames and fit the planks. They fit like a glove. We didn't have machinery like we have today! We used to use all hand tools, we didn't have no machines. We didn't have a god damned piece of machinery of any kind.

"Got masts by cutting down trees. Towed 'em over and hewed 'em out by hand and made 'em into spars! How 'll that be?"

"That is quite an accomplishment for a person as young as you were. How long did it take you to build it?"

"About a year is all," Gramps answered proudly.

"What did you do after you built the Manzanita?"

"Well, by that time the steamboat business declined and Crawford and Reed shut down. Like I told you, I was the last man laid off at the yard."

"If you were the last man laid off, you must have known quite a bit about ships by then?"

"I was a regular ship's carpenter by then. I knew everything there was to know about shipbuildin'. After that, all I learned was how to get somethin' done."

"Where did you go after Crawford and Reed shut down?"

"Jack Pitman, who was workin' for Heath at that time, was

sent to work in Canada, helpin' show the Canadians how to cut stuff out on a power jig saw usin' belvels. He asked me to go along because I knew how to turn bevels. We went up to Canada and worked on the 280 foot Princess Royal. She was a passenger vessel built for the Canadian Pacific Railroad. We worked on her for eight or nine months."

"What did you do on her?" I asked.

"I started out turnin' bevels on the jig saw and then started workin' with the head dubber. That was the toughest damn job there ever was. Dubbed overhead with a seven inch adz all day! We had to make the frames, plankin', and ceiling fit like a glove. Take a little off here, a little off there."

"When I returned to Tacoma, there wasn't any shipbuildin' activity goin' on then, so I sold the Manzenita and built my own boatshop on Vashon Island."

"How much did it cost to start your own business in those days?"

"The land didn't cost me a thing. The property for my boatshop was on an end of a street. We sailed the Manzenita from Tacoma with all our poseessions on board. Let's see, they was my mother, John, my younger brother, and my sister. We lived in a tent to begin with and a little later I bought some property up on the hill and built a shack for us to live in."

And so, when Gramps was twenty-one, he built his own forty by thirty foot boatshop, bought a gas engine, a little