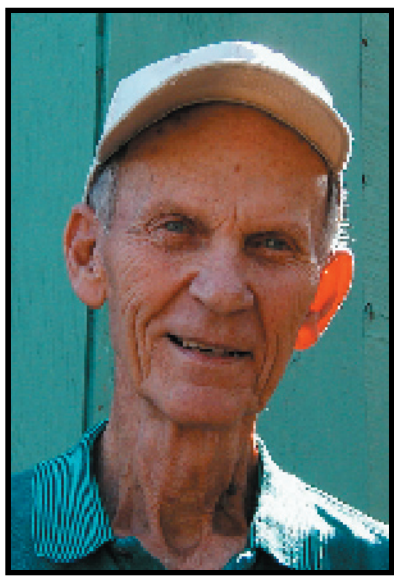
JACK JENSEN

Union County resident for 62 years

AN ORAL HISTORY



Interviews in July & August, 2002
at his home in Union OR

Interviewer: John Turner

UNION COUNTY, OREGON HISTORY PROJECT
2004
(revised from 2003)

UNION COUNTY, OREGON HISTORY PROJECT

An Affiliate of the Oregon Historical Society

A non-profit, tax-exempt corporation formed in 2002

In collaboration with Eastern Oregon University
Cove Improvement Club History Committee
Elgin Museum & Historical Society
Union Museum Society

Purposes

To record & publish oral histories of long-time Union County residents
&
To create a community encyclopedia

Contributors

Union County Commissioners' Transient Tax Discretionary Fund   Frontier Motors
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For a list of people whose interviews are available as edited transcripts,
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copies of transcripts are $4.00 each + shipping & handling

Preface

Much of the history of a place is stored in the memories of people who have lived there. Their stories may be told to family members, but, unless someone makes a special effort to record these stories, they become lost to future generations.

Each of the historical societies in Union County, Oregon has begun to make that effort. Tape recordings exist in several locations, some of them transcribed in written form, others not. A more ambitious and thorough effort seemed necessary so that more of the oral history of Union County could be captured and preserved.

The Union County, Oregon History Project, begun in 2002, is making that more ambitious effort. One of its principal purposes is to collect as many oral histories of older Union County residents as possible and to make them available in both taped and written form. This edited transcript is part of the series of oral histories to be produced by that project.

About the Interviews and This Edited Version

The interviews with Jack Jensen took place at his home in La Grande OR. At age 77, he is vigorous and engaged in many projects.

The first interviewer was John Turner, a volunteer with the Union County, Oregon History Project; he completed a one-hour interview on May 29, 2002. Eugene Smith accompanied him for a second interview and tour of his grounds on July 23, 2003.

Heather Pilling's full transcription (available for research purposes) presents the literal contents of both interviews. The edited version presented here differs from the literal transcription in the following characteristics;

- reorganization of content

- deletion of some extraneous comments

- omission of false sentence starts and other normal speech fillers that detract from readability

- normalization of pronunciation and grammar in conformity with standards of written English.

JJ designates Jack Jensen's words, and *I* the interviewers'.

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Moving to Union County to Make Bricks

I: Please state your full name and date of birth.

JJ: My full name is Jackie L. Jensen. I was born September 30, 1924. Both of my parents came from the tiny country of Denmark, where both families were close friends. They were married in U.S.A., and I was first born.

I: Where were you born?

JJ: Torrance, California, on the outskirts of Los Angeles; it's grown into L.A. now. My father's father taught me physics in the Danish language, which I still speak.

I: What made your family want to come to La Grande?

JJ: We didn't actually come to La Grande first. We moved to Payette, Idaho in 1937. My dad's brother Agner had just purchased a brickyard in Payette, and my dad was more adapted to repairing machinery and getting a brickyard going than his brother. He went into partnership with my dad. That was quite an undertaking. There were five of us children, who saw snow for the first time.

The brickyard in Payette was going pretty well, when we learned about the remnants of the old brickyard in La Grande [near the former Oro Dell on the Grande Ronde River]. So Dad and I decided we would buy the place, put some things together, and make brick.

I: What can you tell me about the brickyard before you came here, and do you know its history?

JJ: The brickyard has been in a couple of locations here on the place. It was located up back for a while. Later on it was moved to about a couple hundred feet from where it is now.

I: You're close to the Oro Dell location.

JJ: Yes. When the first brickyard closed, it was moved to a site nearer La Grande, and we rebuilt that one after the owner had stopped producing brick there. This was about the time I got out of the service--in about 1945. It was quite an active place, evidently with twenty or thirty people working out there.

Ed Towery, Former La Grande Brickmaker

JJ: Ed Towery had it. He used a brick process called a soft mud process. The clay was mixed with water to a soft consistency and either slammed by hand or pushed into a sand-coated

La Grande Brickyard, early1900s
Photo courtesy of John Turner and Richard Hermens

Photos of Jack Jensen in the 1920s, which suggest the beginnings of some of his lifelong interests: working with motor vehicles, making bricks, and making and flying aircraft

Photos courtesy of Jack Jensen

wooden mould to get the shape of a brick. The moulds were turned over, and the brick came out--a strictly muscular process. The extrusion process didn't come out until about 1900. We have one of the very first extruders down there. That's what we ran with.

I: That's similar to a toothpaste tube: push the toothpaste out and cut it off into pieces.

JJ: Yes, as you say, it comes out like toothpaste on a tube. I explained it to the school kids, who came out every year. My analogy was a meat grinder, since most children know what a meat grinder is; quite a few homes still have meat grinders. The clay extruder looks like a meat grinder that, instead of being three or so inches in diameter, is approximately thirty inches in diameter. It's a huge machine and takes a lot of horse power to work it. The inside is like an auger--or screw--in a meat grinder. As clay is dumped into the back part of the extruder, the auger pushes the clay forward with tremendous pressure. It exits through a small water- or oil-lubricated die. It keeps the edges, the top, and the bottom very smooth and shiny rather than ruffling them. It looked for all the world like fudge. Twice in my lifetime I've watched school kids--boys both times --convince themselves that it was edible and take a bite. They got out of there quick because they had a mouthful of sand and grit. It's very hard to lecture to a bunch of school kids and watch a scene like this. I think what probably promoted the idea was the other factory across the track from us --Valley Sausage. The kids had visited Valley Sausage just before they came to the brickyard, and all of them had gotten a little hunk of sausage to eat. That was an edible trip. I've enjoyed talking to the kids when they get done with their visit to the brickyard.

Back to Ed. He had only one leg. The story behind that involves his roll crusher, called a grizzly because it was mean looking from the top. Horses with the fresnos [metal tools used for scraping and moving dirt; see below] dumped dirt on top, and somebody shoved the dirt down into the crusher. (If you've ever operated a fresno, you found them kind of interesting: catch something on that cutting lip and you could end up over on the front side of the horse.)

The grizzly had a long conveyer belt that took the dirt to the pug mill. One day, when Ed was pushing dirt into the grizzly, he slipped, and one leg went

A fresno--metal dirt scraper, formerly drawn by horses and guided by a man; used in making roads, for example
Photo by Eugene Smith of fresno belonging to Gary Webster

through the crusher. Of course, that was his demise; he never again got out to do much. He gradually fizzled out.

Details of the Earlier Brickmaking Operation

JJ: There were hundreds of dryer sheds here, about seven feet tall with shelves like a cupboard. Somebody took pallets of brick from the machine on a two-wheeled wheelbarrow, which had iron wheels and long racks, and rolled them to the dryer shed. There, the bricks dried on top but had to be turned over before they curled up like a board. So a lot of La Grande kids were hired, after the bricks had sat there for a day or two, to go through a process called edging. Little kids and big kids got a job at the brickyard edging brick. It took all day.

I: How do you think the bricks got from here to downtown where they needed them to build?

JJ: Everything was horse and wagon all the time Ed Towery was here, except right at the last, he started using some motorized equipment. By the way, the best place to see how many brick were consumed is go up and down the alleys in downtown La Grande. Almost everything you'll see is brick; the front might be wood or something else.

I: Have you seen any remains of the original brick factory?

JJ: No. The evidence of what used to be here disappeared very quickly.

I: Do you think that first brick factory in La Grande was built in the 1890s?

JJ: Yes, about then.

I: Is there anything at all left at the site of the second brick factory?

JJ: There's a foundation for a set of pulleys--a piece of concrete with a couple of bolts sticking out. There was a square area that was the motor house. When we first saw it, it was falling apart, but we could see how it worked.

I: Can you explain the older way of making brick?

JJ: It involved a soft mud brick machine. A wad of wet clay, essentially square, was slammed by hand into a form. The machine cut the top off and dumped it out on a pallet.

I: A pallet is a wooden platform; how many bricks to a pallet?

JJ: A pallet contains about eighty-five

Piece of concrete with bolt sticking out:
one of the only remaining parts of
the second La Grande brick factory
Photo by Eugene Smith

bricks. When they're extruded, they're quite stiff and will support quite a bit of weight without deforming.

Getting the La Grande Brick Factory Started for Third Time

I: To restart the brickyard, what equipment did you have to get ready so that you could make brick?

JJ: Everything. There was nothing to make brick with. We had to run on our intuition and what knowledge we had of brickyards. Brickyarding has been in the Jensen family for five generations. I'm the fifth generation that has been a brickyard operator. My sons--Chris, Greg, and Dan, the sixth generation--did that work for a little while.

We put in the semblance of a machine that would extrude clay, and we had an 1895 cutter. It looked like a butter or egg cutter. It's a big heavy machine that draws wires down through the clay column and cuts the bar that's being extruded out of the machine into two-inch width. That was about all there was to the first machine we operated for the first year. We shoveled the mud into the machine. As the brick came out from the cutter, we put them on pallets. That was our first year.

I: [standing in a sloping field between JJ's house and the U.P. railroad tracks] Did you get the clay from this site?

JJ: Yes. Both the first and later clay sites used to go clear across the present location of the railroad tracks. When the railroad company finally decided [ca. 1884] to build here, they used the clay as a sub-base for the tracks. Railroads always, as I understand it, use about two to three feet of clay when they're going through a city as a sub-base and put rock on top of that. The clay acts as a cushion so that the trains don't shake the nearby houses.

More Details about Brickmaking

JJ: Most of the clay around here is too rich. Clay that is too rich is called a fat clay; it shrinks so much that it's very hard to dry it without its cracking into pieces.

I: What compound is it too rich in?

JJ: It's a complex chemical of aluminum silicate and aluminum oxide. Most brickyards, clear back to ancient times, mixed clay until it formed a stiff patty. Then they let it dry, watching the shrinkage, as it air dried. If it's too rich, it will shrink too much and crack;

Bricks made several years ago in Jensen brickyard
Photo by Eugene Smith

if shrinkage is less, there isn't enough clay to give it strength. Everyone tries for eight to ten percent shrinkage.

We temper it with sand; even dirt will work sometimes. The clay here is very rich, so we had to use two parts of sand to three parts of clay to get shrinkage down.

I: Do you have any guess about what geological processes formed it here?

JJ: Clay is formed from granite. Feldspar, which is a big part of granite, is aluminum silicate. (The main constituents of the surface of the earth all over are aluminum and oxygen, believe it or not.) Dirt is a very complex thing when you start analyzing.

I: Where did you get your sand?

JJ: We got sand at different places in the valley. The valley has quite a few sand deposits. It would be interesting to know how it got here.

I: Since you put the bricks on pallets and dried them, what was your loss because of cracking or an occasional rainstorm?

JJ: It depended upon how well we kept them covered when they were very wet and how hard the wind blew. Since everything was dried outside, we probably got a five to ten percent loss.

I: I think you made both common brick and one with a scratched surface. What was that called?

JJ: Facing brick. Common brick is used, for instance, for the insides of fireplaces and furnaces--places where they wouldn't generally show. A face brick can be scratched with a bunch of nails in a row, or the surface can be sheared off, leaving a kind of ruffle.

I: Did this occur when it was being extruded from this mixing machine?

JJ: Yes.

I: Did that make it come out in a square form?

JJ: That's it. Otherwise it would be a little hard to do that after they were burned.

I: You also made pavers?

JJ: Yes. A paver is made from the brick column or bar as it comes out of the die. It's approximately four inches high and a little over eight inches long, made by mounting a steel cutting wire across crosswise on the die. As the clay came out, it cut itself in two to make upper and lower pieces.

I: When your brick and pavers had been air dried, I think you put them in a kiln. Could you explain what a kiln is?

JJ: A kiln is an oven that I could compare to a ceramic kiln because the temperatures inside the kiln end up in the neighborhood of 1,600 to 1,800 degrees Fahrenheit. We needed temperatures that high because there is enough glass with a low melting point in the clay that the glass slightly melts and fuses the particles together, making the brick extremely hard. I'll explain the chemistry. The aluminum silicate molecule has a hydrate molecule attached; this water molecule gives clay a brown appearance. If we detach that hydrate molecule from the aluminum silicate, the reflective color of clay, if it has other elements in it like iron, will burn red, green, or yellow. It becomes a solid and won't dissolve in water or other liquids.

I: Please explain what happens in the firing process.

JJ: Air dried clay that looks dry but actually still has lots of water in it. Some of it is "mechanical water," which means that, if you heat it up, it will evaporate. Some of it is "chemical water," which means that water molecules are attached in different ways to make different compounds.

All firing processes for clay brick and tile involve a slow heating process. The first heating temperature is about 312°. We hold that until we can measure the humidity of the exhaust from the kiln. As soon as the humidity goes down, we raise it to about 700°. Between 700° and 800°, the chemical water breaks down in a sudden evolution of steam that comes out. After the chemical water is extracted, one more step is necessary before turning the kiln on full: oxidation of carbon in the clay. Most clays have a small amount of carbon; oxidation of carbon converts it to carbon dioxide. We hold the temperature at approximately 1,200° to get this carbon-oxidation state. If we take what looks like a dry brick and put it in through a 1,700° kiln, which is the final temperature, the brick would literally explode like a piece of dynamite. It's very important that this doesn't happen because it's very expensive to rebuild a kiln. We did that one time. I had turned [i.e., made] a little electric kiln in a shed downstairs in this house. It could hold two bricks. I thought I would raise the temperature very fast. I turned it clear up to 1,700° and left the house on an errand. When I came home, I saw a white powder all over the downstairs. There were shredded ends of the kiln, powder, and pieces of brick sticking to the walls all over that shed.

I: I'm wondering about the number of arches that you put in a kiln and the size you usually made it.

JJ: We could have three bricks lengthwise between arches. Arches was the fire.

I: Did you stack the brick before it was to be fired in those arches?

JJ: Yes, with spaces in between so the heat can pass up through. That was the skove kiln.

I: About what size in feet was that?

JJ: The skove kill we had held 100,000 bricks. The skove kiln was a quite common brick-burning furnace way back in history. The last kind we had down here was the little tunnel kiln. It worked backwards of a skove kiln. The fire is inside an arch kiln; it comes in one side, up through the top of the dome, down through the brick, and through holes in the floor. Exhaust gasses are let away through an underground tunnel to a chimney outside the kiln.

I: How long did that take for the skove kill to come completely up into heat and then to cool?

JJ: The burning process would take about six to seven days. Most of that time was used in water smoking, which is gradual build up. The actual burning of the brick took place in about the last two days.

Propane as Fuel

I: Did you use propane for the first time when you started using the tunnel kiln?

JJ: Yes.

I: You also used waste motor oil, as I recall.

JJ: We used some waste motor oil. It was the one way of eliminating waste oil from the city, though it made the operation a little harder. Most of the oil was diesel or a punker--a thinner bunker oil that worked quite well. We never really followed through with propane; it was a little on the expensive side. Natural gas would probably be the most economical fuel to burn with today. There are so many restrictions nowadays, though, that burning any fuel would cause a lot of brickmakers to go out of business.

I: I remember you were one of the first to use propane to operate your Reo truck.

JJ: Yes. We converted the Reo's main power plant to propane. It was quite a change. A lot of people came out to see what the process was.

I: What were the advantages of using propane?

JJ: Propane is used as a vapor, like gasoline. Gasoline in an engine is sprayed to get it to vaporize as fast as possible, though it's almost impossible to get it to completely vaporize before it passes through the engine. Consequently, as the droplets burn in the presence of oxygen in the engine and by the time they pass through the entire engine, the gasoline, which is a hydrocarbon, has lost most of its hydrogen. What is left is carbon--a little chunk of black stuff that comes out the tailpipe. That's the common way of explaining gasoline as fuel.

But propane is entirely vapor. It's as good as completely burned before it gets through the engine, with no carbon particle. We changed the oil filters in our car because we felt guilty rather than because the oil was getting black.

Brickmaking and Brick Laying as a Business

I: Your brickyard operation was mostly done by your family--your parents, brothers, and sister when it started and your own children, too. Is that correct?

JJ: That's right. We have hired people, though it's been a family project. It hasn't been so big that we couldn't do most of the work ourselves.

I: Where have you sold the finished brick?

JJ: The city of La Grande used about 25%

or 30% of the brick we've made. The other 70% or 75% was shipped out of town--to Pendleton, Elgin, Baker, and as far as Wallowa. A few went to Portland. But there wasn't enough brick building going on to support a full-sized brickyard. Most people were using siding and wood.

I: You once told me that most of the brick work was done in November and colder months.

JJ: Brick layers came from out of state and found that the winters here weren't California winters. We would end up about November in a crescendo--a triple forte. We found a lot of jobs that weren't completed, so the standby brick layers that stayed here would have to go around and finish jobs all over the place. I even found myself going out and helping with some of these jobs.

I: What year did you start laying brick yourself?

JJ: I started laying brick when I was fourteen years old. By the time I was eighteen, I had probably laid a half a million bricks. I started mostly laying bricks for people whose bricklayer had run off and left the work half done. I gave them the helping hand.

I had jobs here in La Grande like putting a face on a building downtown or perhaps the college. I did quite a bit of work at the college putting pavers in where students walked. I learned which times of days traffic was particularly heavy and so I had to plan for those times. Ackerman School was used for teacher training. The students would get out of class about thirty minutes before their buses came, and, of course, they all headed for the kooky bricklayer, who was putting pavers in their sidewalk. Within a few days, I knew I would have to plan on this: as soon as the bell rang, I would have several hundred little kids sitting on the ground. We had a full-scale class--raising their hands and asking questions. We had a good time. One day the school bus came and all the kids headed for the school bus. I noticed about a dozen grown-ups, sitting intermingled with the children. These were the college professors, who had such a curiosity to find out what was going on out there that they had snuck out and infiltrated the troops. They came out laughing and said, "By golly! This is really an interesting class we have out here!"

Downtown it was altogether different. You always have to entertain when you're on Main Street. If you're timid, you had better not try something like this because people stop and ask questions. It's an all-day process of entertaining. I remember one day two ladies had walked inside the scaffolding that I used to kind of shield myself. They had walked over to where I was putting rock facing on the front of an apparel store. I turned around to get a trowel full of mortar, and this lady was clear up to her ankle in warm mortar and didn't know it. I was faced with a terrible question of how to solve this problem. I finally got the lady's attention. She looked down at me, and

I politely said, "You're standing in my mortar." The poor lady almost died! So what can a bricklayer or a rock mason do? He politely lifted the lady's foot and scraped all the mortar off with his trowel. I found myself washing a lady's foot with a bucket of warm water on Main Street with about fifty people standing around and applauding.

These are some of the things that can happen on Main Street.

I: For many years, buildings downtown were built with lime and sand. Adding cement made quite a difference in holding the building together, didn't it?

A Short History of Brick Mortar

JJ: Oh, yes! Cement and lime have been used for thousands of years. It used to be that the mason himself would go out and find limestone. Marble and different types of sedimentary deposits are limestone--a calcium carbonate. If you heat calcium carbonate red hot, it becomes calcium oxide, which years ago was called hot lime. If you mix calcium oxide with water, it becomes calcium hydroxide, which is a cousin to lye, or sodium hydroxide. When they used calcium hydroxide, sand, and water to lay up the mortar, after fifty or so years, the calcium hydroxide absorbed carbon dioxide from the air and become calcium carbonate again, or limestone. In the process, though, with the constant freezing and thawing, mortar disintegrates. There are also things in the atmosphere that break down lime and sand. In the 1940 decade, experimentation started: adding a little Portland cement to the lime mixture, with the result that it bonded the bricks together. I noticed a lot of the masons still used lime and sand, but they were converting to adding cement. Masonry has gone on far back in history--using clay products and even burned clay products, though they couldn't melt them or bake them as hard as we do now. The ancient bricklayer also found deposits of limestone; in almost every city there were clay and limestone deposits. The old mason built a lime kiln; I've found them along side of mountains here and there. Where they found a little limestone, they put it in the kiln, heated it up red hot, and took his hot lime out to the job. When he was ready to use it, he poured water on it. It cooks and boils and steams like crazy and makes one beautiful border. It's a very old process.

I: What is the mixture of Portland cement, lime and sand for laying brick?

JJ: We try to use as much sand as possible because it's cheap, but we don't want to use too much in that in lime, either, because the sand grains are spread apart. As the lime and cement mixture dries, it shrinks and will crack loose from the brick. If you use it too rich, it will bond for a few hours and then, as it dries, will break the bond. One of the best mixes is three parts of sand to one part lime and possibly up to one part of cement; that amount of cement makes it a little more plastic. One part of cement will make it easy to use, and it will cure without cracking.

Marriage, Family, and House Building

I: I know that, after you came to La Grande, you married Jean Hendrickson and started building your house just above the brickyard. The first part of the house was about twenty-four feet by twenty-four feet, wasn't it?

JJ: Yes, just a little square. I met my wife to be, Jean Hendrickson, in 1947; that was the beginning of my wonderful family--Jorja, Chris, Greg, Judy, Dan, and Shari, who have been my pride and joy and have been involved with all the projects we have undertaken. Today, with the addition of twenty-four grandchildren and four great grandchildren, the projects still go on.

I: As your family expanded to a total of six children, your house got a little bigger, didn't it?

JJ: Yes. Add-ons and add-ons--upstairs and downstairs. I have thought since then I should've made it so I can take the add-ons off. But I find that, when the kids come home for Thanksgiving, I need still more add-ons. So I'm perplexed as to what to do here.

Interest in Photography

I: How did you get into photography?

JJ: I've done photography all my life but not commercially. I got acquainted with my good friend, John Turner, and we've had a lot of fun developing and printing all the photography that our family required. We got to the point to where we were taking pretty good pictures. One day a lady called and said, "I can't get a photographer. Could you come down and take my pictures?" I did. I tried to act as professional as I could, and it seemed to please her. I made some good pictures. From that day on, it was one after another--weddings, family portraits, reunions, and genealogy pictures.

I: You're a Mormon, so there was quite a lot of that going on.

JJ: I think John Turner did, too. We had quite a rapport with picture taking--many, many pictures. The reunions and scholastic settings with football players have made it a fun time. Sometimes it was scary, wondering if we did the right thing and very anxious to get home to process our film to see if anything was there. Incidentally, John Turner and I built almost identical houses at the same time, too. We have a lot in common.

I: In the early days, you built a swimming pool here in your front yard.

JJ: Yes.

I: We had taken a class reunion the night before, and I must've left here after developing pictures about 2:00 or 3:00 in the morning. You poured your swimming pool after I left.

JJ: They were sometimes pretty exciting times. We couldn't wait till morning, could we?

I: No, we had to get it done in order to sell our pictures; we had to have them the next day to sell to the class. So it made a difference whether we made money or we didn't.

JJ: That was it. We had to load the sheet film holders with one sheet of film at a time and, interleaved between the film as we bought it, was a black sheet of paper. I remember one photographer in town. He had four-by-five sheet film holders and had loaded the number one sheet film holder. The black sheet of paper was still covering the negative when he put it in his holder. When he put that in his camera, the black sheet stayed in his camera. He took all of the pictures of the wedding without getting one picture. After I listened to him tell this story, it took me several months to get over this, thinking "I wonder if I might do ..... ?" Can you imagine? Not one came out, and everyone involved had gone back to Wyoming, New York, etc. No wedding pictures.

Interest in Astronomy and Building a Planetarium and Observatory

I: When did you get interested in astronomy?

JJ: I've been interested in astronomy ever since I was like twelve or fourteen years old. I had my first telescope when I was fourteen--a little, three-inch telescope. My grandfather had bought it for me.

I built an observatory when I came to La Grande; it was one of the first things I added onto my house. It was a little closer to the house than it is now. About 1960, we moved the observatory to where it is now. First, we poured a half-round cement dome for an underground planetarium; then we put the telescope observatory on top of that.

This little observatory was inside a round building with a shiny dome on top. It caught the interest of most of the teachers, and almost immediately schools started asking if they could send classes up. They sent a class up for an astronomical field trip, and I've been doing it ever since. I've had between 3,000 and 4,000 school kids up for a class in field astronomy.

When the kids come for a session, we spend the first half hour or so in the planetarium, where we can see all the stars with the planetarium projector inside the underground dome enclosure. After that, it's dark enough to see stars.

Telescope housing of homemade
Mt. Jensen Observatory, 2003
Photo by Eugene Smith

We go up and find the interesting things between the stars. It's been so much fun. I've had so much feedback from kids whose parents went through the observatory and have brought their children back.

About three years ago now, I heard a knock on the front door. When I opened the door, there were a man, his wife, and two little kids. He introduced himself and said, "Mr. Jensen, I don't suppose you remember me, but I used to go to school at Riveria. I will never forget looking through the telescope." Now that isn't any big deal. Looking through a telescope is always fun. But this family, who lived in Alaska, had saved their money and he told his family, "One day we're going to La Grande and I'm gonna show you where I looked." They had made a special trip from Alaska to La Grande and back to Alaska just so he could show his kids this telescope. They flew to Pendleton, rented a car, came over here, and went back to Pendleton and flew home. So you don't really know what kind of an impression you make.

I: That's often said about teachers; they never know where their influence will end.

JJ: Many years ago, I was asked to talk to the kids at Cove School; everybody was out in the gym floor. The principal and all the teachers were there. To get started, I asked the whole group, "How long does it take the moon to go completely around the earth one time?" We had lots of head scratching. Even the principal was scratching his head, so I knew he didn't know for sure. The teachers were in all kinds of positions. A little girl, who was ten or fifteen feet away from me, lifted her hand up and down quickly and then put her head as if to say, "Oh, I shouldn't have done that." I went over to where she was sitting and said, "Can

Entry to planetarium below observatory
Photo by Eugene Smith

Jack Jensen and his planetarium projector
Photo by Eugene Smith

you tell me how long it takes?" She whispered it in my ear. I said, "That's right. Would you tell everybody here what you just told me because I don't think they know." "Well, OK," she whispered. She wouldn't look up--kept her head low. I lifted her up, put her on the chair, and said, "Now say it very loud so they can all hear what you told me." She stood there for a moment. "I think it takes one month." You should've seen the heads! The principal said, "Ah!" I knew he'd guessed wrong.

These little jewels kept popping up.

I: Have you heard about kids who developed a serious interest in astronomy?

JJ: A couple of people have come back and told me. One was my nephew, Tom Isaacson. He loved the telescope, asking questions you wouldn't believe. As he grew up and went through high school, he still came up and asked questions, questions, questions. Finally, at BYU [Brigham Young University], he took a class in astronomy. He aced it and said he never opened the book. He didn't do it as a profession, but he could answer all the questions.

We always exchanged questions and answers at the schools. I'm sure that questions were brought up that added to the teacher's vocabulary of astronomy.

Quite a few years ago, a boy that lived up on Fox Hill Road was kind of a troublemaker in school. Dale Wyatt [La Grande High School principal in 1970s] came here and said, "Jack, he seems to be a little bit interested in astronomy. Can you do something with him?" I said, "Let's give it a try." So this boy walked here every day and fell in love with astronomy. After about a week, he said, "Would it be all right if I come down during the night and take a look through the telescope? I won't wake you up." For the next two or three weeks, if I got up during the night, I'd hear something. This observatory dome makes kind of a rumbly sound when it revolves. I'd look out here and see the dome turning--kind of spooky because there were no lights on. You don't want lights.

I: There he was with his eye glued to the telescope.

JJ: He was out here studying the skies. I always left him charts always like these [points to a pile of astronomical charts]. About a month-and-a-half later, Dale Wyatt said, "I don't know

Jack Jensen and his homemade telescope, used by thousands of students in Union County
Photo by Eugene Smith

what has happened, but this kid is smart, and we're gonna graduate him." It was thirty-seven years and three weeks ago that this kid showed up.

I: He's an astrophysicist.

JJ: I wish. But since then he has married and has a couple of kids. He made a special trip up just to see the old telescope. So it has made a difference with some kids.

I've often wondered, with all the fun things we have in science, how kids could get in trouble. There are too many fun things to do.

I: Science has typically been taught by having kids memorize the textbook and answer questions at the end of the chapter.

Ideas about How Science Should Be Taught to Kids

JJ: We've had so much fun with it. Dave Gilbert, who was a science teacher before became president of the Eastern Oregon College, called up sometimes and said, "Jack, could we do such-and-such an experiment up at your place?" I always said, "Sure, come on up." They were not allowed to do certain kinds of experiments in college, but they knew this kooky guy up on the hill [i.e., JJ] did them anyway. This particular time, they wanted to study the Van de Graff voltage generator. They would bring their own Van de Graff that they weren't allowed to turn on at the school. It generates about a quarter of a million volts. You can have a lot of fun with it if you put your hands on the round ball that's on the top end before you start it; you also need to stand on a bunch of gallon glass jars so you don't short yourself out on the ground.

I said, "Be sure to bring lots of long-haired girls and boys." (At that time there were a lot of long-haired boys.) I set up the camera at one end because I knew this was going to cause quite a reaction. The first one was a girl that had long hair clear down to here [i.e., waist level]. She stood up on the jars and put her hands on the bulb. I said, "Now, whatever you do, don't let go. And all the rest of you guys in this room, don't point your finger at her. High voltage likes to jump to points. So if you're gonna point at her, use your fist." I was watching the gadget over here that approximated the voltage; we were up to about 175,000 volts. The girl's hair was sticking straight out, and somebody did point at the girl. She almost fell off the bottles. The guy finally said, "I shouldn't have done that, should I?" Lesson number one: we'd learned that anyway, and they learned what happened. We get up to about 225,000 volts, and the girl's hair was a ball. We turned out the lights, and out at the end of every hair we saw a purple corona creeping around in the room. It was the most awesome sight you've ever seen.

Another time, the college science teacher called to say, "We're working with x-ray. Could we?" They're not allowed to set up an x-ray machine up at the college. I said, "You want to make an x-ray? OK. See if you can get them up here by 6:00 because it'll probably take us three or four hours before we can make an x-ray machine. We're gonna make it out of plain junk. Nothing but junk." They came up and the teacher asked me, "What shall I assign them?" I said, "Wind your coil around this piece of bolt about 50,000 turns. Get it wound as fast as you can by sticking the thing in the chuck drill having somebody feed the wire in." We were making an Oudin coil--an ancient hypogenerator. It has a little vibrator on the end and looks like a Model-T spark coil. That was the basis for the power. Other kids had the propane burners out, cut a piece of Pyrex tubing off, and put rubber inserts on the end. Inside, we put a penny on a big washer and, with the ball end of a ball peen hammer, we made it concave. That was to be our cathode. Over on the top end, we used a piece of magnesium; I didn't want strong x-rays floating around the kids though they were soft x-rays that wouldn't hurt even if we were careless. We made a capacitor by taking a piece of double-sided particle board, and cut the copper off of the edge to use as a high-voltage capacitor.

While the Oudin coil is charging the capacitor, it's connected up through the TV to the x-ray tube. We got a razor blade and a fish out of the pond. We put next to the x-ray tube and a four-by-five sheet-film holder above. This is proof of the pudding [i.e, that the x-ray machine works]. The students said, "We want to watch this work." I said, "No, you're not going to watch this work. We're going up in the living room." Trailing forty feet of extension cord with a switch on the end, we went up to living room. We heard "Crrrrrackle, crackle, crackle, snap, crackle"--a crackling, kind of terrifying sound. I turned it off and said, "Let's go down and develop it in my darkroom." We turned all the lights out and went in and developed it. The first one was the razor blade; we could see the razor blade on the film. We had made an x-ray. Those kids got so excited you couldn't believe it! This is the dumb stuff.

I: Not so dumb.

JJ: Physics at school can be boring, but they surely remember when we make an x-ray machine.

I: Did they participate in putting it together?

JJ: Yes, all of them.

I: They knew all the elements that went into it and why it worked?

JJ: Yes. I just went around told them what to do. They hooked a wire from here to here, there to there. It becomes fun if you do it that way.

I had a science teacher in the Payette, Idaho high school that operated the same way--Mr. Eldred, bless his soul. He was the most mischievous looking elf I had seen in all my life. Sometimes, when he came into the classroom, he didn't say a word; he was demonstrating. Kids wanted his class because it was fun. We had our fiftieth class reunion about ten years ago, and I asked, "Do you remember Mr. Eldred's class when he drank?" Several said, "Boy do we!"

He came into class with a big, stupid smile on his face, sat down at his desk, where he had test tubes, Erlenmeyer flasks, paper, and some chemicals--sodium hydroxide (NaOH) and hydrochloric acid (HCl). We thought, "Hmmm. What's he going to do today?" We knew one neutralizes the other, but we didn't think about anything like that. He took so much of the NaOH crystals, poured them in a test tube he'd already marked off, and set it down on his desk--still with that kooky smile on his face. You could hear a pin drop.

Next he took out another test tube, poured HCl in right up to the mark he had previously made, and set it down. The smile never left his face. He poured the tube with the crystals in an Erlenmeyer flask and started dripping in HCl. He was both watching where he was pouring and shifting his eyes around the room. All this time he hadn't said a word. About fifteen minutes had gone by now. He felt the bottom of the flask, everybody looking at him. I remember almost holding my breath.

After the stuff had finally cooled down, he drank it--down the hatch, the whole glass. We thought, "He's committing suicide right in front of us!" He still had that crazy smile on his face.

At last, he opened his mouth, saying, "Everybody go to the blackboard and tell me what I just drank." It was hard to take our eyes off Mr. Eldred because we expected him to keel over any second, but we went to the blackboard. We wrote "NaOH plus HCl yields NaCl plus H_2O." Wait a minute now. That's salt. That guy just drank salt water. How can you forget a day like that! That guy was a genius; every one of his classes was like that. I think I really fell in love with science because of him.

Grandpa bought me my first telescope when I was about eight years old. It was a four-inch, from the Johnson Smith and Company. Johnson Smith and Company had a fat catalog, which was printed during the Depression, showing all kinds little trinkets and toys you could get. That four-inch telescope cost $3.90. It didn't make any sense to me the way it was set up with a reflector. A mirror in front of the lens?

Grinding of Telescopic Lenses

I: Tell about grinding your own early lenses.

JJ: The grinding process for the optics on a telescope is extremely precise. You first start with a blank piece of Pyrex [glass]. If your lens is going to be eight inches in diameter, the Pyrex is approximately an inch and a half thick. You have to have the blank that is going to be the lens and a tool which is almost identical to the lens itself--both round disks approximately the same size. What it amounts to, in a crude way, is sprinkling water on some very fine grinding grit between these two disks. The top disk is held in your hand and passed back and forth over the bottom disk. As you do that, the top disk, which is your lens, gets round and the bottom disk becomes convex. The lens becomes concave because it grinds a slight hole--a sagitta in optics --in the top one. You keep that up until you get a curvature on that lens approximately what you want. That curvature is graded as an f number, which is a focal length of this lens.

As soon as you get the rough ground, then you start doing the same process, passing it back and forth, but you use finer and finer grit until you end up with rouge, which is iron oxide. The rouge has the capability flattening the surface.

The last stage, because you're not grinding anymore, is called smoothing. It's done with a very fine grade of rouge that trowels the finished surface. It doesn't grind. You're working on an atomic basis, and these tiny flaps of molecules of iron oxide, as they're pushed back and forth under pressure on this glass, heat the glass up just briefly and push it down--just like you were troweling cement with a trowel.

So it's a very interesting process--a process that involves millionths of an inch of deviation on the glass. The big lens on the observatory out here now is about thirteen inches in diameter. The curvature on the face of the lens has to be accurate to within approximately one tenth of a millionth of an inch. Otherwise it won't work.

More Details about Telescopes and Astronomy

I: How do you mount it so then the lenses will work?

JJ: There are two types of telescopes. In one, called an achromat, you look through the lens, like you would in a camera. The other is a reflector. A reflector is in the bottom, and the lens itself reflects light rather than having light pass through it.

The structure we just talked about is a superstructure for a very thin layer of metal, generally aluminum. Glass is aluminized in quite a complicated process. We try to apply a layer approximately 200 to 400 molecules thick--not very thick. You can see through it. That thickness is just the right amount to keep from building little aluminum mountains--thicker and you start to distort the image.

If you picture this reflector at the bottom end of a telescope, the light comes through at the top end, passes through the telescope, is reflected from the concave mirror (that is, has a slight dip in the middle), and comes to a focus someplace up inside the tube. Just before it comes to a focus, we place a diagonal mirror so that the light can be reflected out through a hole in the side of the telescope tube and through an eyepiece, which finishes the focusing for the human eye.

A telescope eyepiece is slightly different from a daylight binocular in that it is made to be used only at night. Part of the eyepiece is called an exit pupil, or a diameter of light that comes through the eyepiece. For our nighttime vision, the pupil opening of our eyes opens up to about seven millimeters; in the daytime it squinches down to about four millimeters. A binocular you'd use in the daytime has four- millimeter exit; a telescope eyepiece has a seven-millimeter exit.

Some mathematics is involved, but it's not complicated, and almost anybody can do it if they have the patience. Optics takes a lot of patience.

I: Have you found anything interesting in space?

JJ: I don't think anyone will stop looking for new things in space. We keep finding out more and more as we look farther and farther into space. We find that astronomy is actually a collection of mathematics: as far as we can go in mathematics, it has to do with history. What we see in space is past history--past history, things that have happened millions and billions of years ago. There are many religious beliefs on the face of the earth, and I would say that all of them incorporate astronomy in some part of their religious belief. It has to do with chemistry--every facet of science that we can possibly think of. Things that we can't do on earth are being done in space, and that's why we do it.

Inventing a Better Field Burner

I: You worked for the state of Oregon in connection with field burning. Tell about that.

JJ: Farming in Oregon about thirty years ago had reached a peak in growing grass seed. Oregon was noted all over the world for the high quality of our grass seed. But the problem with raising grass seed is that it becomes infected with many types of diseases and weeds. They found that, if a field was burned quickly after the harvest, the fire sanitized the ground. It killed not only the weed seeds on top of the ground but also the fungus and other types of biological stuff that was really bad for the plants.

They tried to find a machine that would burn the grass without the great volume of smoke that open-field burning was producing. The smoke that open-field burning produced was very toxic to many people. It was also harmful because the process they were using sent huge volumes of burning grass into the air: big armfuls of firebrands going way up and landing on the neighbors' haystacks. Somebody wasn't too happy. This was a problem. So I went to Eugene, Oregon and built a machine that amounted to an enclosure that moved slowly along the ground and burned very quickly. We had to burn the loading of grass straw on the ground at high temperature; if the fire was extremely hot for more than three seconds, we would kill the grass--this little nodule just under the surface. The machine exposed it to terrific heat for not more than three seconds and then blew cold air on it. We used the grass straw as fuel, and it burned very quickly.

They found a phenomenon that they hadn't discovered before. If this tiny nodule--the life or germ of the grass--sitting just under the surface, was exposed to heat for not more than three seconds, it seemed that this stimulus led to up to 25% more seed the next year. We had found both a good sanitizing effect from the fire and a means to produce a better crop.

The only problem is that these machines were slow. They weren't quick, like open-field burning, and they were much more expensive than open-field burning. The farmers didn't want to agree right off the bat because they knew that, once the machine developed and was accepted by the Oregon Field Burning Commission, they couldn't open-field burn anymore. They kept stalling. Meanwhile, the Field Burning Commission kept cutting down on the acreage that could be open-field burned. It became a tangled-up mess.

Building an Autogiro

I: When did you build your first flying chair?

JJ: You're talking about my autogiro.

I: Yes.

JJ: I have loved airplanes ever since I was born, I think. Some of the first pictures in the photo album show me as a little kid, sitting on the wing of an airplane. There's been something fascinating to me about flying for all my life.

As for building an airplane, I saw in a 50s *Science and Mechanics* magazine, I think it was, that a man named Igor Benson had just invented a gyroglider --an autogiro that has no motor in it. It's pulled behind a car or a person into the air like a glider. When it was pulled at fifteen to twenty-five miles an hour, the helicopter-like rotor on top autorotated above the pilot's head and provided lift like a wing of an airplane. I fell in love with that and couldn't wait to build one, but I couldn't afford to buy a kit. It was quite expensive, so I used odds and ends and put one together anyway out of whatever I could lay my hands on--parts of the drivelines of automobiles, a water pipe, a set of lawnmower wheels. I spliced together plywood for the rotors. This one never flew, thank goodness, but I learned a tremendous amount by building this first one.

I don't know what I put my dear wife, Jean, through in her lifetime, but she was my co-pilot. I asked this gallant little girl, five feet two, if she would tow me in this contraption. She looked scared as all get-out but she said yes.

I: Was this was at the La Grande airport?

JJ: Yes. We went out to the road between the airport and the highway. At the sandpit at the other end, she started towing me. I noticed, as the rotors sped up and I was getting pretty close to flying speed, that suddenly something weird happened. The rotors suddenly stopped and then slowly started to rotate again. This went on two or three times before we got to the other end of the road. I kept thinking, "What in the world makes them stop?" They made kind of a "whop" when they stopped, but I wasn't sure what that meant. So it was back to the drawing board to find out why this thing stopped. This would be embarrassing, you know, to be up fifty feet and have the rotor blades stop.

I found out that there was a lot of aerodynamics I hadn't thought of and that they didn't show in the magazine pictures. Being a little more sensible, I sent for a plan. My first-ever plan showed me that these rotor blades needed a counterweight on the front leading edge to keep them from flapping--that is, suddenly provide so much lift on certain parts of the rotor blade that the rotor blade twisted up and hit the air completely flat sideways. That's why it stopped. I was very lucky that the rotor blades weren't torn apart.

For the second one, I ordered a kit to make my own rotor blades, and I taught myself to fly it. Jean was my co-pilot. When I first lifted off, we flew almost the entire length of the road. It scared Jean and me both half to death that cars kept passing us up on the road. When there's a car underneath you, you can't land. I had a rough time finding the road. Every time I thought I was controlling it right, I ended up over the bar pit or out over some cows at a terrifying angle on the rope. But we kept going. I was over the road, set it down, and Jean was at the exact end of the road. She couldn't have gone one foot farther. Everybody was out there to watch. They had to come and help me get my hands loose of the controls; my hands were literally clamped on the T-bar. I had been so nervous the muscles had spasmed to the point that I couldn't let loose. They were pulling on the fingers to get them loose. I was sore!

Later, after much practice, I found out that it was extremely fun just to lift off. It required practically no effort. That was about the time we decided we needed power instead of towing it with the car. So we added a pusher engine to the autogiro.

I: It was right behind the pilot, wasn't it?

JJ: Right. It was bolted to the same mats that the seat was bolted to. I sat very close to the very noisy engine, but it was exciting. I remember taxiing faster and faster without taking off. It's when I decided, "I'm going to take off" that it really got scary.

The day came. I had taught myself how to fly, though it is highly recommended that people not teach themselves to fly. Most don't survive the process. I took off and the autogiro kind of turned sideways but still flew straight--one of the weird characteristics of the autogiro. They can be flown almost sideways. I found out later that I was number forty-seven in the United States to fly one of these aircraft. The last I heard there are over 20,000 of them flying all over the world. It's a fun machine to fly. I see quite often a pair of them flying between La Grande and Baker. I got a personal letter from

Igor Benson with a congratulations and a little write-up. I treasure that. I don't know what it is that makes a person love the flying process; either you love to fly or it has no appeal--no in-between. Everyone who flies knows danger is involved, but the thrill of hovering through the air, of being disconnected from the ground, outweighs that fear. Either that or that people who fly are crazy in the head to begin with. I don't know which it is.

Building an Ultra-light

I: Then you decided you were going to build a regular airplane?

JJ: Yes. My kids wanted me to build an airplane and talked me into getting a set of plans. They got me the materials. I built it because I like building airplanes.

I: Have you been working on that in the basement until recently?

JJ: I am approaching age seventy-eight, and I'm still playing with airplanes. This one is an ultra-light--called a Sky Pup. It has a thirty-two foot wingspan and flies with twenty-two horsepower. Everything except the engine has been manufactured right here, including the propeller.

I: Did you have a plan for it?

JJ: Yes. I got the plans and followed them, but I built a better landing gear. The original landing gear was very simple with no shock absorbing capabilities. We're anxious to see what it will do. I might not live past seventy-eight. [looking at fuselage of the airplane in the yard near his house] This is a twenty-two horsepower Zenoah engine. The aircraft has the wingspan of thirty-two feet feet, is seventeen feet long, and has a total weight 250 pounds, without the pilot.

It was designed by a guy in Colorado and is almost entirely made out of styrofoam. If this thing landed in a lake, it could support approximately 1,200 pounds. That's a lot of people. So it's its own life raft. The sides, as you see, are inch-thick styrofoam. The

Ultra-light aircraft (shown here without wings) built by Jack Jensen but not yet flown
Photo by Eugene Smith

View of ultra-light aircraft from right rear of pilot's cabin
Photo by Eugene Smith

wings are in the shop here. The kids ask me if it can fly without the wings. I did some figures on that. The fuselage weighs approximately 200 pounds. It would have to go 142 miles an hour to take off, but I wouldn't want to be in the seat when it did.

I: When you first started building aircraft, you couldn't just go to the hardware store and buy your bolts because they had to have certain strengths. Right?

JJ: Yes.

I: Tell me about that.

JJ: An aircraft has to be strong enough to lift as much weight as necessary, so you don't use ordinary iron bolts; they're too heavy for the amount of strength they have. Consequently, you use a grade called *aircraft quality.* Rather than being made of iron and carbon, like the ordinary bolt, a chrome-molybdenum-iron alloy is used. Molybdenum can triple the strength an ordinary bolt.

The superstructure of this aircraft is fir. The longerons--or the pieces of wood that go from the front to the back--are one-inch-by-one-inch fir, four on the top and bottom on each side. Fir has a lot of strength.

I: Have you had it up in the air?

JJ: No. We've taxied it and found it's a little squirrelly because it's a tail-dragger. I've just about got the undercarriage changed around. It'll have a nose wheel. It takes off at about thirty miles an hour. It's very short but I think it will fly all right.

I: I recall your saying that, on a recent tryout, you learned something about the fuel line. What was that?

JJ: We took it out and did some high speed runs at the airport. We found that, because we're using a two-stroke engine--that is, an engine that uses a mixture of oil and gasoline--we always have a little oil that comes out the exhaust. We've used a flexible exhaust pipe from the engine to the muffler; it was in front of the windshield. Consequently, the oil leaked through the flexes in the pipe and very quickly completely made the windshield so cluttered with oil and dirt we couldn't see. We decided we've got to make a few changes in order to avoid a few things that can spoil your whole day if you're up there flying!

Another thing was that the brakes were too tight. We've had a tendency to tail dragging and therefore to its standing on its nose. That's also embarrassing. Also, my instruments were too close to my face--six inches above my head. That's too close, so we're going to move it. Other than that, the thing flies fine.

Military Service and the Development of Radar

I: You'll improve. When you were in the Army, before you came to La Grande, what did you do?

JJ: After going through radio school, I qualified for a secret process in the Air

Force--radar. Since it was a secret part of the Air Force, we were called signal corpsmen, not radar technicians. We belonged to the Signal Corps--waving flags, climbing poles, and fixing telephone lines. They issued us pole climbers and a set of instruments to check out field poles and other things I've forgotten. We were told that we were never to mention the word *radar*; we were always flag wavers.

It wasn't until the war was over that we found out just how secret this was and why we had to use camouflage. Radar was a device that the English had devised. What it amounted to was sending out short, fast pulses of radio frequency energy that echoed from objects in front of you. These radio signals could be bounced off clouds, aircraft, ships, or mountains. In total fog or total cloud cover, we could see objects miles away. If we were looking for an enemy, we could see him but he couldn't see us. It was a curious device for us because we'd never heard of anything like this. It was one of the things that helped win the war, I think.

I: Where did you serve?

JJ: I never got out of the United States. English instructors came over to teach us for a month, and we went out and worked with radar and taught men how to operate it. New versions of radar came out, so we went back to school, worked on the equipment, and went back to teach again. This is what I did all the way through the war. We ended up with radar that was quite compact.

The transistor hadn't been invented yet; we were still using hundreds of tubes, making the equipment very heavy. It has been interesting to see the era of the tube all of a sudden die and disappear and a brand new gadget come out.

I remember hearing on the radio when the very first transistor was made. I thought, "That's got to be a joke." A solid state gadget that could produce as much as a good old tube made me a little bit envious. They were kind of ridiculing the thing that I had idolized all my life: my electronic tube. This happened about 1985 or '86.

Meeting One of the Inventors of the Transistor in La Grande

JJ: I had the extreme good fortune of talking to one of the three people who invented the transistor: Shockley. I met him by accident when I was pointing some brickwork in downtown La Grande. A man across the street saw me and kept walking back and forth. Finally, he came across the street and wanted to know what a good mix is for putting rock on a wall. In the conversation, he mentioned his name: Mr. Shockley; that name stuck with me. I said, "You wouldn't be …?" With a big smile on his face, he said, "Yes. I won't hide it from you." I closed shop, and we sat down and talked the rest of the afternoon. I treasure that afternoon talk with one of the three people who made world a different place through television and computers.

I: It's interesting that he'd show up in La Grande.

JJ: Yes. Evidently he had a relative or friend here.

Building a Front-end Loader from Odds and Ends

I: [standing near an old piece of machinery] What's the story about this machine?

JJ: Old Watson is the front-end loader I made. The reason it was called Watson was because most of it was made from a World War II surplus vehicle--an amphibious duck that was a landing-craft-truck combination. It's quite a large machine; evidently, the chief operator of this vehicle was named Watson because the name was written on the dashboard, along with five or six swastikas. It was very plain to see that this was run only by Watson. The name stuck with the remnants of what we used to make Watson. I think most of the kids in La Grande know that tractor by that name.

Right after World War II, a tractor with a front-end loader would probably last for two hours. The man who was manager of Van Patten Lumber in La Grande at the time needed a better one. He asked me, "Would you build us one, Jack?" I said, "Oh, golly, I've got a brickyard to build." He came back with "Come on, we'll pay you a good price." So I built them one--better than the others. The guys at La Grande Lumber were a little bit jealous, so I told them I'd build them one, too.

Very little of what you see here is the original Watson. It's long as all get out, and there's a reason for that. I wanted the bucket as far forward as I could get it. Of course, it had to have counterweight in the back. I wanted a short a turning radius as I could, so I stuck one wheel in the back. That crazy thing has been running for fifty years and it won't die; we keep using it.

I: It still operates on propane, doesn't it?

JJ: Yes. Do you see that bucket in the front? That bucket is a 1900 fresno. It had four-foot-diameter wheels with iron tires and was with a team of six horses. I thought, "Gee, that's just

Two views of Jack Jensen's front-end loader, "Watson"
Photo by Eugene Smith

about what I need." It's made out of wrought iron. Most people don't know what wrought iron is.

A Little Lecture on Wrought Iron

I: Why don't you explain what wrought iron is?

JJ: I don't know if you can buy it anymore. Wrought iron is ordinary iron that still has a lot of slag in it. The slag is like a sponge full of iron. You can heat it up until the iron in the sponge liquefies, but the sponge doesn't. You can heat up the two ends of a piece of wrought iron and pound them together with a hammer, welding it.

I: Does it have a lot of strength?

JJ: Yes, but it's very fibrous. That might have been the thing that ruined the Titanic: very low-grade iron that wasn't capable of the stresses put in it. Analysis of little slivers of the Titanic's iron shows that it acts a little like wrought iron instead of the steel we use today.

Watson's Durability

JJ: Anyway, with Watson here, I couldn't put the main cylinder on top, so I got a piece of tubing, polished it up on the inside, and put some threads on one end. That became my main cylinder. For some strange reason it still works. Commercial ones don't; they wear out.

Other Metal Objects

I: [pointing to another metal structure, much mangled] Was that an early attempt to make a stand for your telescope?

JJ: No, that was for a TV dish.

I: Your own satellite dish?

JJ: Yes.

I: Did it work?

JJ: Yes. It's still sitting over in the picnic area [near JJ's house]. Incidentally, part of a satellite dish is on top of the observatory. That has kind of a fun history. It used to be sitting on Mt. Emily, pointing upward; they'd take a signal, bring it in, amplify it, send it back. It had deicers to melt the ice, but one of the deicers didn't work, and about half a ton of ice went down and sheared the lower parabolic reflector off. That's what's sitting there.

I: Yours for the picking?

JJ: They brought it to me. My son Chris was baby-sitting the translators on Mt. Fanny. We decided to haul an eight-inch telescope clear up on top of Mt. Fanny. I have never seen such a beautiful sky in all my life! All the smog is below. We came back the next Monday, and the telescope was gone. Somebody picked it up and hauled it. We called the State Police to be on the lookout, though we never expected to see it again. They said, "We'll find your telescope." First thing you know, it was broadcast on the radio. Everybody in La Grande found out that the Mt. Jensen Observatory telescope had been stolen. Some little kid called the State Police and said, "I think I saw something that you talked about out at farm near Cove." A few days later, the place was swarming with State Police. They found our telescope. The kid said, "I thought somebody abandoned it." They hauled that telescope to my place immediately and got the thing set up. Two school classes were scheduled to my observatory, and two of the state policemen had children who were in those classes. I got to thinking this stuff isn't mine; it belongs to La Grande, Oregon. I just get to run it.

On the Grande Ronde Valley as the Best Place to Live

I: Is there anything that you would like to say that I haven't asked about?

JJ: We came here in 1941. I got to know people quickly because the first thing we did was set up the brickyard. I've seen a lot of growth and a lot of the commercial buildings disappear. I've seen a lot of people move in and out. I've seen a lot of people move back because they like it here. During my travels in World War II as a radar instructor, and I was in most of the states in the United States. If I had my choice over again to pick a place to live, I don't think I could find a place that I liked better than La Grande. That's saying a lot. Every state I've been in has some little thing I didn't like: New York, too big; Los Angeles, moving too fast; Miami Beach, Florida, nice in the winter but lousy in the summer. That's the way it goes all over the place.

I: What are two or three of La Grande's or Union County's specific assets--things that you like.

JJ: I like the weather.

I: You like really hot weather and really cold weather?

JJ: It isn't really hot, I think. I don't mind a few days of hot [said in the middle of three successive weeks of very high temperatures]. I've also been in some places and seen people cook eggs on a piece of steel out in the sun. That's hot. Winters don't get awfully cold. We have lakes close to us. Right here where I live I've always thought was a nifty place. We have three boys and three girls. Jean and I could choose up equal sides and have a war. Where else can you do that? When I was in New York, I visited a friend on the seventh floor of an apartment building. They were raising children where their playground was about twenty feet of hall space outside the front door. If the kids were very quiet, they could walk up and down their playground. Their mom was enthralled if she carried one little sack at a time up to her window box, where she had a half dozen radishes growing in the window. And I thought, "I'm pretty lucky where I live." I can't imagine living like that. You can see what I do around here. Can you imagine my doing this downtown even?

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