



A meeting of the presidents

Representatives of TAPPI and Japan TAPPI meet in Japan to share insights on the paper industry.

DONALD G. MEADOWS

During the Pan-Pacific Conference, F. Keith Hall, president of TAPPI, and Shigeo Nakajima, president of Japan TAPPI and executive vice president of Jujo Paper Co., had an opportunity to exchange views during a lunch at the conference site. Joining them were Hideo Gotoh, executive director of Japan TAPPI; Francis R. Marchetti, chairman of the TAPPI international committee; Wayne H. Gross, TAPPI director of international operations; Donald G. Meadows, *Tappi Journal* editor; and Norie Suzuki-Evans, who served as translator. An edited version of their discussion follows.

Japan: Japan TAPPI has about 4000 members, U.S. TAPPI has about 34,000 members. In Japan our membership increases when the new university graduates join right after they get out of school, but recently the number of those members is decreasing. Is that the same trend in the States?

U.S.: I don't think it's quite the same. We have a lot of student chapters. It doesn't cost university students very much to participate in TAPPI activities. Then sometime after they join the industry, they have to make a decision whether to become full members or not. That's when we lose a lot.

Even though many companies pay the membership in TAPPI for their employees, nevertheless we lose a lot of student members who find they cannot get away from the factory to take part in TAPPI events.

In fact our biggest problem is to attract the young people between the age of say 22 years, when they graduate from the university, and about 34.

Japan: Not only in terms of the membership number, we're looking at the composition of new college graduates who join TAPPI. Our problem is we have graduates from chemical majors, like agricultural majors, but people who majored in mechanical or

TAPPI President F. Keith Hall and Japan TAPPI President Shigeo Nakajima



electrical science do not join TAPPI. Is that the case in the United States?

U.S.: I don't know that we have the same problem. The largest percentage of members, I think, are chemical engineers, but there are a very large number of mechanical and electrical engineers who are TAPPI members. I have never heard that we were getting too many of these and not enough of those.

There are, of course, other professional societies in the United States that you can belong to if you are a chemist or chemical engineer or electrical engineer. For example, if you're an electrical engineer you can belong to the Institute of Electrical and Electronics Engineers, IEEE. Some of our employees do choose to belong to that society rather than to TAPPI.

It is common for TAPPI members to have second memberships. Some belong to the electrical engineers' association or the chemical engineers' association, and belong to TAPPI, and some of those associations have small sections that are related to the paper industry and we cooperate with those sections from time to time.

Japan: I, myself, am a graduate of the mechanical engineering department so I belong to a mechanical engineering association, as well as TAPPI, but in Japan there is no joint effort between TAPPI and any kind of mechanical engineering association. Another problem we are facing is we get few graduates from the mechanical engineering department.

U.S.: I think here in the United States the industry attracts many young engineers who do not wish to go into one of the so-called high tech industries like electronic engineering or aircraft manufacturing. Some of these engineers would rather work with the big machinery in the paper industry and, of course, the job situation in any industry changes their desires from year to year. When the high-tech industries are doing well, we have more difficulty recruiting engineers. When they're doing badly, the paper industry is a very solid base and it provides good, steady jobs for a lot of people.

For example, the defense industries are declining because of the end of the Cold War. That makes a lot of engineers available to us who were not previously there. The last time this happened was after we put the first man on the moon and the rocket program was reduced and a lot of engineers became available at that time too.

Japan: Unfortunately in Japan we do not have any flourishing aerospace or defense industries and we're not being able to get many mechanical engineers.

U.S.: Are the universities in Japan graduating many engineers?

Japan: The population as a whole is declining, so even though the number of people who want to go to universities are increasing, this decrease in the population as a whole and increase in the candidates who want to go to the universities sort of neutralizes those two trends. So many people who go to the universities major in the humanities instead of engineering, so that in the future they can go to managerial jobs instead of going to factories. In Japanese culture, there is the idea or preconception that factory work is not clean and attractive. It's very difficult to get young people to take factory-related jobs.

U.S.: We have very similar problems in the United States. From now until the year 2000–2005 perhaps, the number of 18-year-olds going into college is going to decrease, so we have to try and attract more of those young people into engineering or chemistry. It's not easy.

One of the things we have been doing in TAPPI is to start an educational initiative to try and help, along with many other people all the way from the president on down. We're trying to get more people interested in the quality of education and in going to

the university and extending themselves with difficult courses like engineering.

Japan: I can tell you the data which I obtained from Tokyo University about a year ago. Among the graduates of the mechanical engineering department, only 40% went to manufacturing-related industries and 60% went to nonmanufacturing companies; for example, banks, insurance companies, and airlines.

People who major in mechanical engineering have expert knowledge of, say, chemical properties, hydroelectric energy, thermoenergy. But since they go to nonmanufacturing companies, they will waste all this information that they have acquired in four years of college education. So I asked them why did they do that. They answered that if they join nonmanufacturing companies, then on a daily basis they will be able to wear clean outfits, they will be able to stay in the metropolitan area, and the salary is higher in nonmanufacturing industries than manufacturing industries.

U.S.: We have a very parallel story to that, but I think it's changing. Back in the 1980s when the stock market was booming, all the young people wanted to be in Wall Street in the investment community. I remember the dean of the chemical engineering department of Princeton University telling me that in 1988, all the graduating class went into the investment community; none went into engineering. This was in chemical engineering. That is a terrible waste.

That has changed now because Wall Street has had serious problems and it's no longer so attractive. Now the chemical engineers from Princeton are going into chemical engineering, I think.

Japan: The same thing can be said in Japan. As the investment bubble bursts, the trend is shifting toward the direction that you have mentioned in the United States. But looking at the trend of this year, we still have very difficult times getting high-quality students into the paper and pulp industry.

U.S.: Speaking for my company it has been better this year for us. It's been better the last three years: '92 was better than '91, '91 was better than '90.

One of the things we find is that when you are successful in recruiting from a high-quality university, those students communicate back to their fellow students next year and it makes it easier—if they like the jobs—it makes it easier to recruit them the next year.

Japan: The main hurdle that we Japanese must overcome is the fact that we cannot get that first person.

U.S.: That can be hard. I, myself, recruit at MIT every year in the chemistry department and sometimes we have to interview 20 people and offer 10 or 15 jobs to get the one person.

I've seen at this meeting some young lady engineers in the paper industry and maybe a couple from Jujo. Could this be a source of

TAPPI and Japan TAPPI representatives **Wayne H. Gross, Francis R. Marchetti, F. Keith Hall, Shigeo Nakajima, and Hideo Gotoh**



high-quality graduates for the future, maybe for the paper industry in Japan?

Japan: Yes, we are looking at recruiting female students.

U.S.: We have seen a similar trend in the States with young female engineers. It is more than 10 years now since we first started to recruit female engineers intensively. They are moving up through the system; in fact International Paper Company has 22 mills. We have two female mill managers.

Japan: The trend to hire female workers is increasing, not only in Jujo, but in other paper mill companies. We started hiring female workers about 10 years ago and most of them went to labs. They were hired as researchers and now some of them are promoted to managers, but at the paper mills we do not hire any female college graduates.

Thinking about the Japanese culture and tradition, I think it is still difficult for female workers to become a superintendent at paper mills and take the initiatives.

U.S.: It's been difficult for us too. The American male worker still balks at working for a woman many times, so it's difficult. You have to overcome that. It takes a lot of talent on the part of the woman too, to succeed as a manager.

Japan: I visited paper mills in the United States several times. I remember seeing female operators who are working in the three-shift environment. I was very amazed because they are working the same shifts as male workers. In Japan we have this rule that prohibits women from working the third shift, meaning midnight. It was very difficult for us to include women in the three-shift environment.

U.S.: It sounds as if we have many similar problems on both sides of the ocean.

The pulp and paper industry in the States has always been a low-profile industry. The average man on the street doesn't think much about the paper industry, but it's also a very large industry. It's probably the fifth or sixth largest industry. It's bigger than the steel industry, for example. It's always been a very good employer of people, so it has an attraction to those that want to have steady employment.

Japan: The same thing can be said of Japan. The steel industry reached its peak in 1975 and ever since then their production volume reached a plateau, so it's about the same. Except for the two oil crises in 1975 and 1980, our production volume has been increasing steadily over the past 30 years, the average being 6% per annum. Where we make the comparison to the previous year, we always have an increase, so in that sense we can say that the paper and pulp industry is more stable than the steel industry in Japan.

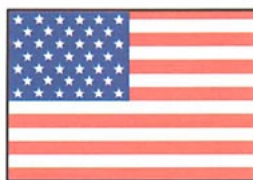
As you know, we are facing various environmental problems and there is a trend for people to say not to waste any paper or not to waste any natural product. We are reflecting on the lifestyles that we have been leading in the past years and we think that we have too much garbage, so there is a movement that promotes less usage of paper. If that happens, then our production will slightly decrease in the future. Is that the situation in the U.S. too?

U.S.: Many of the things that you said are very true for the States too. If you look at the FAO statistics on the consumption of paper, then there is a relationship between GNPs and kilos consumed and the United States is about 660 lb per person per year of which about one-half is packaging papers. The rest is various other kinds.

Japan is certainly ahead of us in terms of percentage of recycling. The American Paper Institute is committed to recycle 40% by

1995, 40% material used. I think in Japan it's already more than 40% and I heard yesterday somebody quoted a target figure of 55%.

Japan: As of last year the percentage of recycled papers was 52.5% and we would like to raise this figure to 55% by 1995.



U.S.: The problem is that the costs go up steeply as you go for the last few percent I think in recovering it.

Japan: Absolutely true.

U.S.: There's another aspect to consider, also. The United States wastes less food than any other nation on earth. Part of the reason is very complicated because it involves refrigerated trucking systems and whole refrigerators, but part of it is also due to packaging. So though some environmental movements criticize the amount of food packaging we use, nevertheless, a lot of it is there for preservation and avoiding damage in transit which results in this low wastage of food.

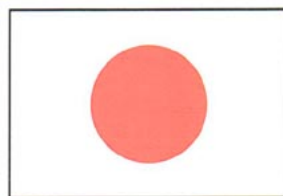
Further ways in which this shows is the quantity of waste produced by each individual each day. In New York it's about 4 lb of garbage per person per day of which much is related to packaging and wrapping. In Mexico City it's more than 4 lb per person per day and a lot of that is food that is spoiled.

Japan: That is very interesting information. There are two criticisms that I related to the usage of paper. First, people criticize that people use too many papers at offices. In the past five years the usage increased twofold. That means that on a yearly basis the increase is about 15%. The second criticism is overusage of wrapping papers at department stores.

U.S.: I've never heard the use of paper in offices being criticized. We know that it's gone up and we thank goodness because it's good for business. We used to worry a lot about the move to electronic information and whether or not that was going to cause the consumption of paper to decrease. That hasn't happened. Everybody seems to want to have a hard copy of what it says on the computer.

So, quite the contrary. I guess IBM did some studies based on the idea of the paperless office by using little computers and what they discovered was that the consumption increased dramatically when computers went into an office because of the high-speed printers and everyone wants a copy. The computers really stimulated the consumption of papers.

Regarding wrapping papers in stores, in Germany that has declined now, particularly in supermarkets. The supermarket has to allow the customer to unwrap the excess packaging and leave it in the store for recycling by the store if that's what they wish to do. We think that trend may come in the United States, perhaps in some areas. For example a toothpaste tube is inside a box. In



Germany if you want to take the tube out of the box when you pay for the tube, leave the box behind in the store and the store will recycle it.

There is an additional part to that story. The Germans are currently trying to get legislation

in Germany where if say Jujo or International Paper produced paper that went into say packaging, Jujo or International Paper would own that paper to the point where they would have to take it back whenever the consumer was finished with it. So in essence you sell the paper to a converter, the converter turns it into a packaging material or what have you, but then once it's discarded, it would be the paper company's responsibility to take it back. This is not in force yet but it has a lot of people very concerned that it may be a nontariff barrier to exporting paper into Germany.

However, I think in Germany that situation is designed to increase the amount of recycling and since in Japan it's already so very high, this kind of pressure may not be applied here.

Japan: We've already been informed about the movement in Germany and we are very much concerned about it.

Since the Earth Summit in Brazil there is a movement in Japan to have the law on environment which is called Fundamental Environmental Law. If all the stipulations in that law will be enforced, then all the industries including pulp and paper industries will be restrained, therefore, we have a committee within the industry to provide comments to the government officials so they will be able to listen to our opinions, too. I am the president of the Science Academy so I am very busy with that too.

U.S.: Yes, I'm sure that's true. One of the concerns I have about the Earth Summit is that everybody makes the assumption that because the carbon dioxide content in the air has gone up, that the global warming will naturally follow and I don't think that's demonstrated at all. The data do not indicate any abnormal changes in the atmosphere.

Japan: In Japan the government is trying to control the amount of carbon dioxide by having laws that will ask the industries and people to save on energy and promote recycling. But I personally do not think that those two ways will be the answer to solving the problem of carbon dioxide.

U.S.: I agree. I think one of the ways in which Japan, I think, has a good case to be made for environmental conservation is that it already incinerates something like 70% of its municipal waste. As long as you capture the thermal energy of the incineration process, then you are gaining energy that would otherwise have to be obtained from fossil fuel, therefore, you are improving the global warming situation, if there really is one.

Japan: It is true that carbon dioxide's amount is increasing and there is no doubt about it, but we do not know whether the

Japan

increase in the amount of carbon dioxide directly relates to the global warming. Because in Japan the energy fuel is very expensive we try to conserve more energy and save energy. That was a motivation for us to work in that direction, but even though we were to have energy-saving activities on the 100% level, it is impossible for us to maintain the present level of carbon dioxide in the years to come.

In Japan there is a trend of trying to restrain or even decrease our GNP, but that is intolerable. I don't think the answer to our problem is to come up with a rule that will regulate the amount of energy used per person or for industry, but the answer to our problem is to develop clean energy. We think the government should fund the development and research of nuclear fusion-related energy, maybe we might be able to realize this facility in the year 2000, or at least by the year 2030.

In order to save us in between 1992 to say 2050, the time where nuclear fusion-type power plants are available, I think the answer is to build more nuclear power plants. As in the case of other countries, we Japanese are especially allergic to what might happen to nuclear power plants, so maybe it might be very difficult for us to increase the number of nuclear power plants.

U.S.: I agree. There's nothing wrong with conventional nuclear power. There's only been two nuclear power accidents. The one in the United States—the Three Mile Island accident—was insignificant, less radiation than from a luminous wristwatch escaped. In Russia the accident was serious. It killed a lot of people. But nevertheless it doesn't have to happen. We kill a lot of people in conventional, thermal power plants, running on coal and oil, every year. Nuclear power is a safe way to go as long as it's properly engineered.

U.S.: The conference presentations gave the impression there are a lot of small paper mills in Japan. Are there certain differences between how you have to address their problems compared with the larger paper companies?

Japan: Whether you belong to a large or small company we share three basic problems. Number one is raw material problems, another one is environmental issues, and the third one is energy-related problems, so in that sense we can say there is no difference between the small and large paper mills, but the counter measures they might have might be different from one region to another. Another case is in terms of local or regional paper mills. If they use large amounts of recycled paper, that is another issue they have to face too.

There is a difference in the severity of the recruiting difficulty between large and small mills. Large mills can easily hire operators, but in small paper mills it's very difficult to hire operators.

U.S.: With the increased emphasis on the environment and recycling in the United States and old growth forests and such, how might that affect both the supply of pulpwood and recycled

materials that have been coming over to Japan? Will that start to limit the supplies from the United States? What other areas might serve as new areas for supplying the pulp needs?

Japan: There are many intertwined factors, so it's very difficult to predict whether the amount of pulpwood from the United States will increase or decrease in the future. Looking at the breakdown of raw materials we get, about 50% of the paper in Japan is made from secondary fiber, 10% is from imported pulpwood, 20% comes from domestic pulpwood, and the remaining 20% is from imported chips. We are trying to make more paper from secondary fiber. Pine wood is imported from New Zealand, hardwood chips from the United States and Australia. Douglas-fir is imported from the West Coast of the United States, but that may be more difficult for us to import in the future.

In terms of the 20% of imported chips we use, I don't think that will decline. But in the long term, we need to work on forestation and artificial plantations of more trees for the usage of paper and pulp. We have already started that activity.

Many labs that are associated with pulp and paper companies in Japan are researching biotechnology so they can use that information in developing plantations.

U.S.: Are you talking about genetically improving the growth of certain species?

Japan: Yes, we are focusing on genetic biotechnology. But I don't think all the pulp and paper companies are studying the same areas. My company has the allocation of pulping. We are studying paper pulp wood that will have a limited amount of lignin. We are also studying enzyme bleaching. In the long term we might go into biopulping.

U.S.: It looks like we have very similar objectives on both sides of the Pacific Ocean. I think the Europeans are the most advanced in the use of xylanase for pulping treatment in order to reduce the amount of chlorine. I think that will become more common. I know Jujo has been very successful in the use of lipase for resin reduction. I think there will be a number of applications of biotechnology in the paper mill.

Japan: Biopulping as a concept is very easy to understand, but the cooking phase is so time consuming that it may take many years to bring biopulping to the commercial level. ■

Meadows is editor of Tappi Journal.