PANEL DISCUSSION

Chairman's Opening Remarks - Mr. G.R. Barrow*

Ladies and gentlemen, welcome to our International Panel Discussion. Before I introduce the members of the Panel to you, I would like to take a few minutes to explain how we plan to conduct the proceedings this morning. The meeting will be in three parts. In Part I each of the Panel members will comment on the highlights of the ferro-alloy industry and related industries in their particular geographical area during the years 1970 to 1980 inclusive.

In Part II, we will open the meeting up for a question and answer session between you the audience, and the Panel members. In Part III we will return to the Panel and ask them to look into their crystal ball and advise us what they see as the problems and opportunities that face the ferro-alloy business during the 1980s. At this time, it is well to remember what the speaker said this morning when he referred to the 1960s as being the golden age. Well, in the ferro-alloy business, it was just that. Many of the companies expanded their capacity and some companies even made acquisitions. Interest rates were relatively low, most countries had single digit inflation and unemployment was at an acceptable level.

During the 1970s, all this had changed, particularly with the quadrupling of oil prices in 1974. To learn about the impact of some of these changes that took place in 1970, hopefully, we will hear from the Panel as to how they affected the ferro-alloy industry.

It is not very often that an organization such as IPFEO has the opportunity to host an International Assembly such as INFACON and the Organization Committee has been extremely pleased with the quality of the speakers and the reception that the audience has given them.

By the same token, we are extremely pleased that we have been able to secure the services of six internationally known executives. We are glad that they have taken time out from their busy schedules to be with us today.

An old professor of mine at the University once told us that you cannot learn anything while you are talking, so I will now be quiet and introduce the Panel to you.

On my extreme left we have Dr. J.P. Kearney, Chairman and Chief Executive, S.A. Manganese Amcor Ltd (SAMANCOR). He was also very active as a member of the Organizing Committee of INFACON 74. Next to him is Mr. T. Tomioka, Chairman, Japan Ferroalloy Association, President, Japan Metals & Chemicals Co. Ltd. On my immediate left is Mr. F.C. Kroft, Jr., Vice President, Union Carbide Corporation, President, Metals Division, Union Carbide Corporation. On my immediate right is Mr. K.K. Kielland, President, Elkem a/s. Next to Mr. Kielland is Mr. J. Gall, President/General Manager, SOFREM, and on my far right is Mr. P.E. Streicher, President, South African Ferro Alloy Producers' Association, Managing Director, Samancor Management Services. He was also a member of the Organizing Committee of INFACON 74.

Let us start the meeting with comments from Dr. Kearney.

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I. HIGHLIGHTS OF THE FERRO-ALLOY INDUSTRY AND RELATED INDUSTRIES IN PARTICULAR GEOGRAPHICAL AREAS DURING THE YEARS 1970 TO 1980 INCLUSIVE

Dr. J.P. Kearney

I referred briefly on Tuesday to the ferro-alloy industry in South Africa. There has, as you know, been an increase, a remarkable increase in production during the last few years, particularly in chromium and manganese alloys, but I would say that we have now reached the stage in South Africa of maturity with respect to size and technology. The reasons for this growth are in fact, as I mentioned on that occasion, the unlimited resources of raw materials, relatively low cost source of non-oil based energy, good technology and research coupled with adequate skilled and semi-skilled labour and a satisfactory infrastructure. These factors, together with the very strong market demand in the mid-1970s, encouraged the existing producers of ferro-alloys to expand their facilities as well as attracting the establishment of new works during the last few years. South Africa sells ferro-alloys to the international market. SAMANCOR exports some 90% of its total alloy production and many South African companies export 100%. We are thus very concerned with production and growth in the world steel industry. We are also in sympathy with the many serious problems that face the steelmaker, particularly in his forward production planning. Many countries lack natural resources of minerals and, for this reason, together with the pressure from the environmental groups, they have found that it is uneconomical to continue their own ferro-alloy production and, consequently, many steel producers have come to rely more and more on South Africa for their ferro-alloy requirements, which has in fact caused a dramatic growth of our industry during the last few years.

Mr. T. Tomioka

The Japanese steel industry and its associated industries are now equipped with modern, efficient and competitive plant and machinery as a result of repeated efforts for rationalization. On the other hand, recently developing countries have also achieved a great deal of development in their steel industry and they are more or less self-sufficient as far as steel is concerned. Therefore, the Japanese steel industry cannot expect further growth of exports of sizeable quantity any longer and the role of the Japanese steel industry is changing to one of technical cooperation.

Under the circumstances, our ferro-alloy industry in Japan is also undergoing change from quantity to quality by keeping pace with development of our steel industry with a clear understanding of our role and position as an associated industry. It is also trying to keep self-sufficiency of ferro-alloys by strenuous efforts for technical development.

Japan is heavily dependent on oil and has experienced an oil shock three times resulting in higher cost of energy such as electricity. To cope with such a situation, our steel industry has taken various measures for developing oilless operations, improving usage of by-product gas and generating power in the field of blast furnaces, etc.

Our ferro-alloy industry has also overcome such difficulties as achieving economical use of energy, resources and labour, while developing "substitute energy" in hydro- and geothermal power generation and obtaining the good understanding and cooperation of our customers.

Development of "substitute energy" is one of the most important issues in Japan and "overall development of new energy association" has been recently formed as

a joint venture between government and private enterprise. Literally, this association is aiming at developing "substitute energy" on a national basis and is regarded as the promotion body for a wide range of technical developments in coal, solar, geothermal power generation, etc. The establishment of this association is quite encouraging for people like ourselves who are trying out such developments on their own and it is believed will be helpful in making Japan less dependent on oil in the near future.

In Chinese steel projects, you have seen a certain stoppage in drastic growth. The new steel mill plan has been modified to meet their economical conditions and to aim at stable growth. As in the case of China, we cannot expect significant growth either in steel or in ferro-alloys. How to survive in such difficult times is my headache and my challenge.

Mr. F.C. Kroft, Jr.

It would certainly be impossible to try to cover all the factors that have brought about a dramatic change in the ferro-alloy industries in the 70's in the time that has been allocated to us. So we thought that it might be well to try to cover two of what we consider to be principal factors and then to talk a little bit about the business conditions as we see them and have seen them in 1979 and 1980.

The two factors that we think have been key during the 70's are the re-distribution of the ferro-alloy business worldwide and the adjustment to social change. In the re-distribution of the ferro-alloy business worldwide there has been a growth in South Africa and in Southern Africa. There has been the Japanese rationalization in silicon and, to some extent, in chromium. There has been a proliferation of suppliers and of marketeers in Spain, Mexico, Portugal, South Africa and South America. The adjustment to social change caused by the environmental impact during the 1970's has changed the ferro-alloy industry in North America. The rapidly rising energy costs have contributed to the changes. Capital constrictions, the high cost of money and the fact that the environmental impact necessitated a high percentage of the total capital expended in the industry be directed toward pollution abatement were important factors. These individual factors, plus combinations of them, have forced the closure of high cost facilities and have really changed the profile of the industry in North America and Canada.

Looking to the immediate past, and let's say the current, 1980 has been almost a mirror image of 1979. In 1980, we had a good first quarter, then a slackening off, and hopefully a bottoming out in the third quarter, July and August. There has been some marginal recovery in steel recently. For the week of September 29th, the melting rate was at an annual rate of 100 million ingot tons. This is up from the low annual melting rate in August of about 81 million tons which was the lowest rate since the 1930's. Inventories of alloys in customers' plants is very low at the present time, so any upswing in their production requires almost immediate delivery of product. New car production is in full swing at the present time to supply the dealers' showrooms but the acceptance of the new cars by December 1st certainly is a critical factor in sustaining car production in 1981. There has been some indication of price increases for alloys in recent weeks and we believe that cost will have more influence than demand on price.

Mr. K.K. Kielland

When commenting on the most influential factors affecting the ferro-alloy industry in our region the last decade, it is unavoidable that some of the comments already made will be repeated. The time allowed is also very short so I have to do it in the form of the following points:

- Energy

Limited supply of additional power during the last ten years has created a situation where no new facilities, no new plants have been built in our region during this period. There has been a very limited supply of power to existing facilities for increasing their capacity.

- Pollution control

The pollution control increased very rapidly in this decade. Ambitious goals set by our authorities both in regard to the level of pollution and the time-table for meeting these regulations have caused great non-productive capital investments. However, I would comment that a more realistic attitude has found place during the latter part of the decade by our authorities in extending the timetable and thereby giving us a bit of relief in this area.

- Economic trends

The violent fluctuations in demand following the general economic trend, coupled with a very high rate, and, I would say, constant rate, of inflation together with this investment programme in the pollution area, has, of course, drained even more capital which could have been needed for more productive investments. In the earlier part of the decade, Norway decided not to become a member of EEC. I think today that we tend to overlook the effect of that decision, but it is in my opinion that this decision caused a situation where we were not able to strengthen and increase our market position in the EEC countries and I think it also caused other people within the EEC to increase their capacity in this period and this is part of the over-capacity problem that we are facing today. And last, of course, we have an increased competition as a result of the very quick and huge development of the ferro-alloy production in South Africa.

M. J. Gall

Pris entre les indications générales que je vous ai données lundi et les indications plus particulières qui se développent de la gauche vers la droite, je commence à avoir le sentiment de la redite. Néanmoins, je voudrais souligner que l'une des caractéristiques de l'industrie de mon pays est de faire partie de la Communauté Economique Européenne et, au risque de ne pas être d'accord avec mon voisin, je dirais que cette zone est une zone très libérale. Je ne sais pas ce qu'il en est sur les produits agricoles, mais je sais que pour les ferro-alliages, la protection est faible, l'une des plus faibles des zones industrialisées consommatrices et, de ce fait, nous sommes particulièrement exposés aux fluctuations de la conjoncture qui se traduisent par un afflux de produits dans les zones les moins protégées.

La décade a été marquée par un développement très important de l'industrie des ferro-alliages dans des pays nouveaux, ce qui est normal, mais nous en avons subi un impact particulièrement important. Comment un pays comme la France dépourvue de ressources propres d'énergie a-t-elle pu y faire face, le dire serait trop long dans le temps qui m'est imparti. Il est un fait que son industrie des ferro-alliages a traversé jusqu'à présent la période. Je ne dirai pas sans dommage, mais elle existe encore à peu près au même niveau qu'antérieurement. La concentration était l'une des réponses, concentration entre sociétés qui a permis une meilleure unité d'action, une présence commerciale plus forte. Il n'y a plus que deux groupes producteurs en France. Je ne pense pas que nous irons beaucoup plus loin.

L'un des deuxièmes facteurs a été le progrès technique et, comme nos amis japonais, la recherche d'une orientation vers la qualité et la spécialisation plus que la quantité. Toutefois, au début de la décade et avant que le problème énergétique n'apparaisse, avec peut-être un certain manque de prescience, nous avons lancé un investissement nouveau sur un alliage de masse, mais nous l'avons fait avec la recherche des technologies les plus modernes d'économie d'énergie. C'est la voie dans laquelle mon pays s'oriente et c'est, je crois, la caractéristique de la période écoulée.

Mr. P.E. Streicher

Seeing that Dr. Kearney has discussed the more general aspects, I wish to concentrate somewhat on the technological aspects of the South African ferro-alloy industry. We were most fortunate in so far that, when demand increased for the ferro-alloys, we were able to start 'de nouveau' on the plants. This means to say that the South African ferro-alloy industry was fortunate in the same respect as the Japanese steel industry, that we could bring in high technologically developed plants right from the start. We imported the know-how from all over the world to be able to build these ferro-alloy plants. In many respects, the South African raw materials have specific characteristics which meant that considerable research had to be done on the proper utilisation of the South African ores, and, in this instance, I particularly refer to the matter of the chromites from the Transvaal. So in the first instance, we did import the know-how and in the second instance, we realised that we had to do some very extensive research in development in the application of our processes. In the 70s, we have done this and we are now in the position to utilise that know-how that we acquired. In the process of establishing the new industries as well, we had to look as a country on the development of the infrastructure. Tied up with this, was the building of very big coal based electric power plants, generally just under 4 000 MVA each, with the power station based on the coal pit-head. Now, that obviously also led to the application of modern mining technology which put us in a position to be able to supply the coal at comparatively decent prices to the power stations. This aspect is quite important. The next stage was the development of the railway infrastructure to handle both the minerals and the products derived from the minerals, and in this regard the stress was on the development of mass train loads and on the electrification of the South African railway system. This was completed in the 1970s so that we have a very efficient railway system in South Africa at the moment.

Considerable development work was done by institutes like the National Institute for Metallurgy as well as the South African universities, and in view of the very high demand for technologically skilled people who were not available, certain definite programmes had to be instituted to be able to get the necessary trained personnel. Therefore, the industries had to finance the studies of students in South Africa to be able to train them for this particular purpose. Now the infrastructure is developed.

The next stage was then, after the collapse of Mozambique and the problems encountered in the export of alloys through Maputu, the South African authorities had to look at the development of South African harbours. This progressed well and the future harbour for the export of South Africa is going to be in Richard's Bay where new techniques of shipping the material is being instituted at this present moment. It is foreseen that the loading rate for alloys by 1985 would be at the rate of 10 000 tons per 24 hours. Obviously we, as ferro-alloy producers, realise that alloys cannot be handled roughly; it has to be handled in a proper way. The accent has been on the development of the techniques to load and to handle the material. A further aspect has been the

change in the shipping pattern and the establishment of depots in the consuming countries. The tendency at the moment is to ship the alloys at the rate of 20 to 25 000 tons charter ships to the consuming areas. Since then, there has also been a recovery of the situation in Mozambique and definite plans are in hand at the moment by the Mozambican authorities to build facilities for the shipment of alloys. It has improved considerably and, over the last year, the loading rate in Maputu has increased by something like 20%. The scheme should reach completion by 1983. These are aspects I wanted to stress. The very last point is that, in going for the optimum sized furnaces at that particular time, it necessitated, of course, considerable teething troubles. Fortunately, we do think that this is behind us now and that we could be looking for the full utilisation of our existing capacities. That is all I have to say.

II. QUESTION AND ANSWER SESSION

Mr. G.R. Barrow to Mr. J. Gall

I would like to ask Mr. Gall how he sees the investment programme in France and in Southern Europe, in particular over the next five years and how it has changed from a year ago with the impact of the high cost of money and high cost of maintaining inventories, etc. I would like to know how his investment capital, his investment programme has changed?

Mr. J. Gall

Oui, il y a des problèmes. Dans des situations comme celles d'aujourd'hui, il n'est un mystère pour personne que les "cash flow" des sociétés productrices de ferro-alliages, notamment en France et en Europe du Sud, ne sont pas particulièrement brillants. Ceci complique beaucoup, voire à la limite rend impossible l'appel à ce que nous appelons des capitaux à risques et, d'autre part, le coût de l'argent est un frein aux capitaux d'emprunt, l'absence de "cash flow" lui-même étant un frein à l'auto-financement. Tout cela fait beaucoup de freins et pas beaucoup d'accélérateurs. Malheureusement, il y a quand même dans le temps beaucoup de choses à faire. Je crois qu'il est impératif d'abord de s'adapter aux contraintes de l'environnement qui, chez nous - au contraire de ce que j'entendais tout à l'heure sur la Scandinavie - ne semblent pas beaucoup se moduler sur la conjoncture et ses difficultés. Elles auraient plutôt tendance à se renforcer. Or, nous avons encore des programmes importants à faire. Il y a d'autre part un effort permanent de mécanisation des usines. Je suis fondamentalement convaincu que nous avons dans ce domaine à progresser comme l'ont fait des industries autres que les nôtres, que c'est indispensable. Tout ceci demande beaucoup d'argent. Ce que nous faisons, mais notre cas est peut-être un peu particulier, car nous appartenons à un grand groupe, c'est une certaine modulation dans le temps qui nous assure une certaine permanence de programmes d'investissement un peu au travers de la conjoncture, mais ceci ne peut pas être trop absolu; il y a quand même des modulations et, actuellement, nous avons traversé une phase difficile sur ce plan.

Mr. D. Robert-Tissot, Auvernier Limited, Great-Britain, to Mr. P.E. Streicher

Two days ago in a statement by a previous speaker, it was stated that he felt the blast furnace production of ferro-manganese would be finished in five years' time. As an expert in blast furnace production of ferro-manganese does Mr. Streicher agree with this statement and if so why?

Mr. P.E. Streicher

The essential part in the production of ferro-alloys at this point in time is the cost of your energy. So, where the price of coke relative to the same input as far as the electricity is concerned, is more expensive than electricity, then obviously the movement, for financial reasons, would be away from the blast furnace. I would not go so far as to say that the production of ferro-manganese in blast furnaces is completely out. It all depends on your source and your control of your coke, and it is a matter in what respect the particular producer using blast furnaces is integrated. If the producer controls his own supply of coke and is able to control the cost of the mining of the coal, then he still has a chance to compete with the electric furnace. But in general, in view of the trend, of the increase in the prices of coke and coking coal I would say that the blast furnace would gradually phase out except in a few instances.

Dr. D. Slatter, University of Zimbabwe, Zimbabwe, to Mr. P.E. Streicher

My question concerns the export of charge chrome from South Africa and particularly the question of free iron. What concerns me, I would like to know from Mr. Streicher, is how long this free iron situation is going to last. As I understand it at the moment, the purchase applies to the chromium unit only and the supplier is responsible for the shipping cost of the ferro-alloy. Now, surely, there is going to be a situation developing some time where the supplier is going to say with increased shipping costs we are supplying 40% approximately of iron to the purchaser, for which we get nothing back. So, I would like comments from Mr. Streicher as to whether this free iron situation is going to last indefinitely or whether he sees any price being paid for the iron content of the ferro-alloy?

Mr. P.E. Streicher

That is a difficult question that I have been asked at this particular moment for this is what we are trying to tell to our customers all the way and, as you saw in the presentation, you get the iron for free. Now, it depends on the development of the charge chrome as such. Generally, I would say that in pricing the material on the chrome content alone, I think that it will be very difficult to put it across to the consumer that he has to pay for the iron as well. But the way to achieve your objective is to incorporate the value of the iron in the price of the chromium. The tendency would be - and I believe even in Zimbabwe - that people would tend only to make a limited quantity of the high grade high carbon ferro-chrome for specialised applications and in order to compete in the overall situation, my guess is that we will see more and more charge chrome coming out of Zimbabwe instead of high carbon ferro-chrome. I think it is a very logical conclusion. So I would say that in the future although the material will be priced on the basis of chrome, obviously some credit will have to be given for the iron in the overall alloy and I can foresee that in the years 1990 - and I do not really want to talk too much about it because then I spoil my speech for the latter part of this meeting - there would be a tendency for even lower chromium in the alloys, particularly in view of the development of the UG2 ore in South Africa. I can foresee that the future grade of ferro-chrome may be in five to ten years from now would not be a 50:50% grade, but would most likely be a 45:50% grade.

Mr. C.J. Huijbregts, CIAM, France, to Mr. T. Tomioka

Je voudrais que M. Tomioka nous fasse quelques commentaires sur la situation de l'industrie du ferro-chrome dans son pays.

Mr. T. Tomioka

As I said yesterday, we are now discussing among people concerned to reduce the existing capacity of about 600,000 tons down to 400,000-500,000 tons by not using or by scrapping the less productive furnaces. This is for the maintenance of order on the domestic market by giving a fixed ratio of domestic requirements to imports. But the sharp import drive in 1978 and 1979 compelled us to make substantial curtailments of production. The production figure in 1979 of 320,000-330,000 tons, which is far below the existing capacity, clearly shows how we are depressed by imports.

III. PROBLEMS AND OPPORTUNITIES THAT FACE THE FERRO-ALLOY BUSINESS DURING THE 1980s

Mr. P.E. Streicher

I am going to concentrate on the technical aspects as I see it for the 1980s in the South African scene. In the first instance, we will see the application of the research and development work done in the 1970s. I can see the full computerization of the furnaces operating on ferro-alloys in South Africa and I can see that the stress will be laid on the pre-treatment of the raw material charges to these furnaces. For instance, in the case of chrome, I can see that a greater accent will be put on the briquetting of chrome ore fines including the introduction of low cost carbon in the briquettes and ultimately the pre-heating of the briquettes and finally in about 6-7 or maybe 8 years' time the pre-reduction of the briquettes. This is how I see the situation as far as chromium is concerned. We have already in question time referred to the UG2 scene which I will not repeat now.

As far as manganese is concerned, I can see the utilisation of greater proportions of sinter in the mix; generally something like between 50 and 60% of the charge will be in the form of sinter, and I can see the upgrading of the lower grades of manganese ores to high ratio ores. We have successfully done this in a pilot plant. It is now possible to upgrade a 4:1 ore to a 8:1 ratio and it is only a matter of economics of this particular process before it will be implemented. This refers to the Wessels type of ore which can be uprated; the final production plant still has to be designed.

As far as the production of medium carbon ferro-manganese is concerned, I can see that the old duplex process will be completely replaced, except in the case of the ultra low carbon ferro-manganese, by the blowing processes of which there are a couple in force, including one that has been jointly developed by Creusot Loire and Samancor. I also see the development of diversified manganese products in South Africa with particular reference to the production of EMD and manganese chemicals. I see this as a future trend.

As far as the development in the silicon industry is concerned, I do not see very great development in the silicon industries in South Africa. I think that the place for the production of silicon alloys is possibly still and will remain in the Northern Hemisphere, with particular reference to Iceland and to the Norwegian facilities and maybe in Canada and a few other places where energy is still very cheap.

As far as the South African steel industry is concerned, I do see a rapid development of the South African steel industry and by the end of this decade,

the South African steel production will possibly be between 15 and 20 million tons and it would be primarily used for the development of Southern Africa.

In conclusion, Mr. Chairman, any new furnaces that is to be bought - I think we have reached the optimum size as far as electrodes are concerned and the obvious answer is, if you need to go for bigger units, to go for the six-electrode furnaces; in other words, it is a combination of two furnaces in one, provided all the problems with feeding chutes and seals could be overcome, as well as problems with the charging system. That is how I see the evolution that still will take place in the developing countries.

Mr. J. Gall

Il me paraît évident que la décade qui vient connaîtra également des temps très difficiles pour les producteurs de ferro-alliages de mon pays. Je ne crois pas pour autant qu'ils soient condamnés. Non pas pour l'argument de sécurité d'approvisionnement de nos consommateurs qu'évoquait M. Holschuh ce matin. Pour important que soit cet argument, il ne paraît pas suffisant et je ne pense pas que l'on puisse fonder la permanence d'une industrie sur un argument de ce genre si cette industrie devait être définitivement non compétitive. Mais je crois qu'il y a possibilité de maintenir un noyau compétitif, du moins dans des conditions commerciales de compétition normales et équitables. Nous allons, dans la décade qui vient, avoir des changements par rapport à la précédente et là je ne prends pas la boule de cristal de la voyante mais des faits. Notre programme anti-pollution va s'achever, dégageant autant de possibilités d'investissement soit pour mise en oeuvre de procédés nouveaux, soit pour de la mécanisation et de la modernisation d'usines existantes qui, par rapport aux usines nouvelles, ont l'énorme avantage d'avoir des charges financières beaucoup plus légères.

D'autre part, la France s'est engagée dans un programme énergétique nucléaire dont je ne suis pas sûr que vous mesuriez tous l'ampleur. Je vais simplement indiquer qu'en 1985, 50 % de l'électricité de mon pays sera d'origine nucléaire et qu'en 1990, les programmes seront de 30 % de l'énergie totale à base nucléaire. Ce n'est pas de la prévision: compte tenu des délais pour réaliser des investissements de ce genre, il s'agit de programmes lancés et pour 1985 déjà bien entamés. Ceci va donc donner des ressources d'énergie qui ne sont certainement pas à des prix extrêmement bas mais qui sont beaucoup moins sensibles à l'inflation car elles sont à base d'investissement et, d'autre part, soulever des problèmes d'utilisation et notamment "de courant de nuit" ou "à certaines périodes" où des industries comme les nôtres peuvent apporter une aide aux producteurs d'électricité, par conséquent obtenir des conditions valables.

Je rappellerai ensuite que notre pays n'est pas complètement dépourvu de matières premières contrairement à ce que l'on pense souvent car on oublie que les alliages de silicium sont à base de silice et que la silice est abondante en France et dans le sud de l'Europe. C'est je crois une donnée qu'il faut quand même avoir en esprit lorsque l'on parle des alliages de masse. Je suis bien d'accord que le chrome et, dans une très large mesure, le manganèse carburé ont leur développement logique dans les pays producteurs de minerais, mais je ne vois pas pourquoi la même logique ne s'appliquerait pas à certains alliages de silicium.

Enfin, nous sommes près d'un grand marché, même si les restructurations s'accompagnent de fermetures d'usines sidérurgiques; elles doivent aussi logiquement s'accompagner d'un renforcement de la clientèle qui ne peut qu'être favorable à son fournisseur de matières.

Bref, je pense que nous ne sommes certainement pas appelés dans les années qui viennent à des développements quantitatifs mais bien, comme je le disais tout à l'heure, à la tendance vers la spécialisation; mais, je ne veux pas exclure que nous soyons amenés à chercher dans d'autres zones géographiques nous aussi les extensions sur des localisations favorables venant compléter sur certains alliages de masse, nos productions plus spécialisées de l'Europe. Voilà la façon dont je vois la décade à venir, sous toute réserve.

Mr. K.K. Kielland

It is always very difficult to make a forecast - "particularly about the future" -, but if I should comment on the most critical factors going to affect us in our region during the coming ten years, my list would be the following:

The slow growth in the Western industrialized world in the steel production - and it will be perhaps even a zero growth in our traditional and major markets: this will cause us to direct our export to other markets and markets that are further away from our home base.

As regards energy, the situation will be critical but now not only as regards the quantity to be supplied, but also the price developments. This is in the discussion in our Parliament and will be probably decided upon during the next year. We can as far as availability of power is concerned only count on as it looks now to have at our disposal what we can regenerate from our own system and this will be approximately about 20% of the total energy that we consume today.

As regards pollution control, the pressure on taking care of the external environment to some extent led us to neglect the working environment, the internal environment in the plants and the pressure is certainly building up on us to improve the working environments for our labours inside the furnace houses. This will also lead to a pressure on developing more advanced technology and I have no doubt that for instance all silicon alloys will have to be produced in closed furnaces.

Another factor in Norway is the effect of the country entering into what I would describe as an oil economy. The North Sea oil and gas development puts a special pressure on our economy and I am afraid that our costs will increase more rapidly and at a higher rate than our neighbouring competing countries.

We will also see as the consequence of this then, a change in ownership structure. This will be strengthened during the coming years. We have seen SKW with now ownership in Germany, Canada and USA. We have seen the development by SOFREM in France with more concentrated ownership of the plants in France, but also ownership in countries outside France such as, for instance, Spain. As far as our country is concerned, we have seen the development of establishing an ownership or part-ownership on Iceland and this is by the way the only new facility that I can think of that came about during the last decade because of the special energy situation in this country, and not least to mention the on-going discussions between my Company and Union Carbide. I think this change in structural ownership is not only a more concentrated ownership; it also reflects a more international ownership, and it is my firm belief that this international ownership will be to the benefit of the whole industry.

Then to comment on the developing countries: there has been in the past years a lot of discussions about how strong they will emerge as producers of

ferro-alloys also. I feel that, in spite of the abundant supply of natural resources in these countries, this development will not be as quick and big as many times previously described. And the reason is that the lead time for establishing greenfield plants in these areas with the demand and also infrastructures are so high that to establish a plant will take a much longer time than originally thought. But more important is the capital costs involved which are so high that they tend to more than off-balance the low cost natural resources they would have in raw materials and energy. We have some computations of this and very shortly stated one could say that the capital cost in interest and depreciation represents about a power cost of-30 mils. So, I feel then that existing facilities in the industrialized world which are depreciated and almost written off will still be competitive and that it will be much less expensive to increase these facilities when there is a possibility of doing that.

At last, I will state as far as my country is concerned that we will see during the 90's a maintaining or even a strengthening in our position as a major supplier of all silicon alloys. This is to confirm Mr. Streicher on this point.

Mr. F.C. Kroft, Jr.

Looking into the future, into the 80's, we believe that there will be a tendency for the ferro-alloy industry to coalesce into larger affiliated groups. This has certainly started during the last couple of years and we believe that this tendency will continue and, as Mr. Kielland has indicated, we agree that the ownership of the industry will become much more international in scope than it has been in the past. We believe also that there will be a levelling of the industry distribution or, putting it in another way, rather there will be less change in market participation in the 80's. We believe that the expansion to meet growth will be based on power and material sources. It will also be based to some degree on nationalistic policies. The growth will go to the shifting steel markets keeping in mind the importance of power and material availability at hand. We believe that the U.S. government policies will be much improved during the 80's toward business and toward capital formation. We think that the U.S. will demand and keep a viable steel industry and a strong and viable automotive industry. Alternate fuel sources will become viable in the U.S. requiring major capital expenditures that are steel intensive, thereby providing a needed additional demand for steel.

Mr. T. Tomioka

An extensive study of "a look into the 80's of the steel industry" has been recently made by the Japanese steel industry, which indicates very definitely that significant growth cannot be expected over the long term. From the conclusion of this study, we have to admit that we are limited in quantity growth and that we cannot expect further expansion of equipment for the time-being in our ferro-alloy industry either, in which one new furnace can easily cover the demand for 20 mil. tons of crude steel. How can the ferro-alloy industry survive in such difficult times of management is today's most important issue, as I have already said.

What we can do, firstly, is to respect and honor our respective positions and to clarify each other's role and function for an orderly supply in each region with good understanding that there can be no drastic growth. This common understanding is, I believe, a starting point for a solution of the problems.

Secondly, we have to intensify our efforts for technical development by which we can achieve a change from quantity to quality and we can develop new sources of energy.

Anyway, it is a fact that the ferro-alloy industry is placed in a very difficult management situation. Nevertheless, if any producer should try to solve his problem and to produce more only for himself, it will soon create a volatile worldwide competition only leading to a miserable outcome. We should be careful of each other at least not to waste valuable energy and resources.

Now, my proposition for the 80's is to further specialize in the field of ferro-alloys and to diversify into new business, as well as in the development of new products to consolidate the business. As I have repeatedly stressed in this congress, ferro-alloys are indispensable for steel production and it is our duty to contribute to the well-being of mankind through production of steel. To fulfil our duties of such great importance, we have to take every possible managerial measures to survive in the changing situations. From such a point of view, let us find together our solutions in "diversification of management".

Dr. J.P. Kearney

Being at the end of the line makes it rather difficult to add to the comments made by previous speakers and I agree with what they have said. If I can perhaps just refer back to South Africa, as I mentioned initially, we have reached in our ferro-alloy industry a state of maturity and I do not see expansion in the near future as we have had in the last decade. Any expansion will be on an incremental basis, I would believe, with improved technology and will depend on supply and demand. As you know South Africa operates in a free enterprise profit orientated environment. These will be our guide lines. We also believe that with our large tonnages, we will be a stabilizing factor in the market. We concentrate on long term supply arrangements. We also fully appreciate and accept that for strategic and other reasons, as was explained by Mr. Kielland of Elkem, it is considered important by most countries to have their own ferro-alloy operations. We understand this philosophy and in fact are also a producer in the United States as you know, and we are rapidly learning the problems facing producers outside South Africa. We would therefore continue as a major supplier of manganese ore and chrome ore. I'm talking in terms of South Africa and as you know there are three independent manganese ore producers in South Africa. There are two major chrome ore producers, there are eighteen active chrome mines operating in South Africa so we would continue to supply the raw materials to the countries making the ferro-alloys. I think that another important thing to note is that South Africa has no intention of restricting supplies of these raw materials. We have had the situation from Russia and from other countries where the reserves are small and they tend to restrict supplies. In South Africa this is not the situation. We have large reserves of raw materials and supplies would always be freely available.