SESSION 1 VITICULTURE 08.30-10.15 31ST MARCH

CHAIRMAN - C.T.C. TATHAM MW

PROF. JAMES COOK, California, USA

James Cook is Professor of Viticulture at the University of California, Davis. He took his doctorate in pomology, and minors in plant physiology and soil science at Cornell University in 1951. An expert in soil chemistry and plant physiology, he did 2 years citrus rootstock research in Florida. He was awarded the Domingo Medal of Merit in 1978 for contributions to the Mexican grape industry. He has contributed to several books on grape nutrition.

08.30-08.50 'ADVANCES IN CALIFORNIA VITICULTURE'

In 1970, only one-third of California's 450,000 acres were planted to wine varieties; two-thirds of the 1.5 million tons crushed came from table and raisin varieties. By 1980, the figures were reversed, with wine varieties accounting for two-thirds of the three million tons crushed. During this ten year period, grape acreage increased to about 675,000 acres. 200,000 acres of this increase was to wine varieties, with one-half planted in the cool coastal area of California's finest wines. Experimental trials have greatly improved trellis systems. Each small improvement increasing leaf exposure has resulted in greater yields and superior quality, thus paying for itself within a few short years. Growers have almost entirely converted to two-wire vertical trellises which have improved the efficiency of mechanical harvesting. While a fledgling and doubtful enterprise ten years ago, the four hundred mechanical harvesters in the field in 1981 are expected to harvest approximately 30% of the state's wine grapes. Mechanical pruning, introduced by the Australians five to seven years ago, is currently under experimental study. Rising field labor costs make this a promising alternative. Previous work on selection and heat treatment of virus infections has successfully eliminated this problem. Current studies focus on clonal selection and tissue culture. In addition to these advances, mineral nutrition studies and use of herbicides, growth regulators, and drip irrigation systems have contributed to maximizing yield and wine quality in California.

ALAIN CARBONNEAU, France

08.50-0910 'THE EFFECT OF THE LYRE TRAINING SYSTEMS ON THE FUNCTION OF THE GRAPEVINE: PRESENT POSITION AND BASIC PROBLEMS'

Alain Carbonneau Chargé de Recherches, Institut National de la Recherche Agronomique, Station de Recherches de Viticulture de Bordeaux, is renowned in his field and international circles connected with it.

Findings concerning the correlation between the lyre training system, local climatic conditions and the functioning of the vine will be discussed - the siting of rows and the angle of foliage; the intensity of the sun's heat within the 'canopy'; micro-climatic balance between leaves and bunches; water requirements in relation to leaf-area and plantation density; type of trunk and pruning method; summer pruning and leaf removal. Other factors will also be mentioned: differences in the sun's penetration into loose or tight plantations; relation between the warmth derived from the sun throughout the day between one site and another; the effect of vigorous growth and height on photo-synthesis. Also, some new training systems will be referred to: the 'lyre' system in wide rows: full divided 'canopy' and high-bearing. Several methods adapted for different situations, varieties and economic requirements, will be discussed; for example, comparative results between traditional systems and 'open lyre' for the main red varieties on various types of soil in the Bordeaux area, which show similar yields per hectare from young vines, and better quality from the lyre than traditional systems, particularly in soils suitable for vigorous growth. The relationship between quality noted in tasting and some biochemical compounds of wine will be mentioned.

MICHAEL PASCAUD, France

09.10-09.30 'MECHANICAL HARVESTING'

Michael Pascaud is Director of Veto, Bordeaux, manufacturers of harvesting machines. M. Pascaud is an acknowledged expert in this increasingly important field and his paper on the subject will be of extreme interest.

Historically, it fell to the lot of the poor and underprivileged, far distant places and often from abroad, to help local people gather in the harvest. The cost of their employment in relative terms was slight compared with the wages (controlled by legislation) which are paid nowadays to students who need pocket-money or people who wish for the experience rather than the wages, which are nevertheless high for the grower. Against this background, the introduction of machines for picking is inevitable even against strong prejudice. Their use will increase and in the quite near future be commonplace. Today's ingenious machines are designed to produce results comparable with, and even better than, those produced by manual labour. Michel Pascaud will discuss the horticultural problems, the protection of ripe grapes and the vines against damage, the elimination of waste and the mechanical reliability of the machines themselves.
SESSION 1...

DIPL. ING. JANEZ ISTENIC, Yugoslavia

Janez Istenic is Director of the Oenological Sector of Slovin, one of Yugoslavia's largest wine enterprises with which he has been connected since 1964. He studied agromony, vine growing and oenology at the University of Ljubljana.

09.30-09.50 'DEVELOPMENTS IN VITICULTURE IN YUGOSLAVIA'

Janez Istenic will trace the historical background of viticulture in Yugoslavia from the BC Phoenician and Greek period to the present day. Also outlined in his paper will be a breakdown of the main Yugoslav vineyard areas, with details of varieties production and style of wine produced, with particular reference to climatic and soil conditions. An explanation will be given of the way that viticulture and vinification affects the population (62.5% of the vineyards are state-owned while the balance is in private ownership with the special advantage for co-operation with the extremely up-to-date State cellars). In this connection, reference will be made to the efforts of regional bodies to encourage an ever higher standard of oenology and yield per hectare. An explanation will also be given of the processing of grapes in modern cellarego much improved over the last fifteen years. A reference will be made to State regulations concerning production and distribution of wine which are much in line with those of EEC countries. Finally, Mr. Istenic will deal with the future of the wine industry in Yugoslavia and mention the steps that are being taken to replant, so that by the turn of the century 10,000,000 hectolitres will be produced in an average year, of which 15/20% will be for export. Information concerning the construction of new wineries and improvements to achieve this end will be given.

09.50-10.15 QUESTIONS

10.15-10.30 BREAK

SESSION 2 VITICULTURE 10.30-12.15 31ST MARCH

CHAIRMAN - R.S. DON MW

ANTHONY R. AUSTIN, California, USA

Anthony Austin set up the Firestone Vineyard at Los Olivos in the Napa Valley of California. His knowledge, drive and enthusiasm greatly impressed members of the Institute during their visit to California in 1980.

10.30-10.50 'STARTING A VINEYARD FROM SCRATCH'

There are few aspects of viticulture, vinification and the treatment and handling of wine which are not involved with the problems of starting a vineyard from scratch and Mr. Austin's paper will reveal many of them in the light of his experience in the Napa Valley of California.

PROF. DR. HELMUT BECKER, West Germany

Prof. Dr. Helmut Becker's fame in the field of clonal selection of traditional cultivars, breeding of new varieties and rootstocks, and modern nursery techniques is world-wide. He is head of the Institut fur Rebsaat- und Rebensaat-Zuchtungs-Forschungsanstalt Geisenheim in the Rheingau. Dr. Becker's paper will include a reference to varietal selection in New Zealand, where he spent some time as a guest scientist.

10.50-11.10 'BREEDING WINE GRAPES FOR COOL CLIMATES IN GEISENHEIM - WHITE AND RED VARIETIES'

Doctor Becker's paper will trace the history of the work at Geisenheim since the successful crossing of riesling and sylvaner which produced the now ubiquitous muller-thurgau one hundred years ago to the latest work aimed at producing varieties for cold climates: vigor, healthy leaves, hardwood maturation, resistance to winter cold, constant fertility, robust clusters, resistance to botrytis, ability to produce fresh fruity wine, depth of colour in the case of red wine, and, in the case of inter-varietal breeding, resistance to mildews. Following research into complex crossing, a new generation of Geisenheim varieties is proving to be successful even in years when coulure has been prevalent. The vines are proving to be ripe and fruity and not needing chaptalisation even in poor years. Geisenheim has even created new red varieties like the dunkelfelder recently released. Further research shows promising results - both red and white - with the genes of vitis amurensis and other varietal crossing to produce resistance to mildews and cold while producing wines of character.
11.10-11.30 'PROGRESS AND PROBLEMS WITH FUNGUS DISEASES OF THE VINE'

Protection of the vine against disease is of great importance for viticulture throughout the world.
- 24 virus diseases can be eliminated, mainly by the selection of virus-free material. Chemical protection is difficult, mainly in deep soils.
- 2 mycoplasms are easily stopped by sprays against infection by leaf-hoppers.
- 3 bacterial diseases which do not respond to chemical control are now the great problems for the future.
- 18 fungus diseases need spraying or dusting with mineral or organic fungicides but many problems still need investigation:
  - how to control the diseases
  - the specific choice of fungicide
  - resistant strains of fungi
  - influence of the active ingredient on the vine's susceptibility to parasites.
- 5 nematodes are living on the vine, weakening it or transmitting virus disease. Resistant rootstocks are used against meloidogyne.
- 7 acariens are living on grapevines and their prevalence is increased by the use of some sprays made to control berry-moth.
- Some species of thrip cause damage.
- 26 insects have to be guarded against.
While phylloxera is no longer a problem owing to resistant rootstock grafting, the main difficulty is to avoid the rotting of mature bunches by berry-moth.

11.30-11.50 'CLONAL SELECTION OF THE VINE'

As far back as 5,000-3,000 BC, Indo-Germanic tribes discovered and used the wild vine in the river valleys of the Near East as well as in Southern Europe, in particular in the Mediterranean region. From it, domestic varieties have been cultivated by way of mutation and selection. With the replanting of the vineyards after the outbreak of oidium in 1850, phylloxera in 1863 and peronospora in 1878, the need arose for high performance propagation stock. Just how significant and necessary was this step emerges from the fact that 20% of the stock in the vineyards gave a high yield, 40% a very low yield and a further 40% no yield at all. This marked the beginning of systematic clone selection, which was initiated by Frielich of Edenkoben in the Palatinate by means of three steps of individual vine propagation. In 1921, the German Society of Agriculture carried out the first test on sylvaner and riesling clones. Today we have in nearly all countries laws concerning variety protection and seed-handling, in which systematic, disease-free clone-selection is defined and controlled. About 2,400 virus-tested clones are developed in the world at the present time, which produce an average of 10,000 litres/haeare compared with 2,000 in 1876. It is in the vine growers' interest to plant clones with a high yield producing high quality must and wine, for the right clone makes it possible to earn vastly more per hectare annually.

11.50-12.15 QUESTIONS

12.20-13.00 TASTING OF CHARDONNAY FROM INTERNATIONAL SOURCES

13.10-14.10 LUNCH
SESSION 3 VINIFICATION 14.30-15.30 31ST MARCH

CHAIRMAN - W. A. WARRE MW

BELTRAN DOMECQ JNR, Spain

Señor Don Beltran Domecq gained a Master's Degree in chemistry at Madrid University. He followed his graduation with postgraduate studies in microbiology. He is a member of the Spanish Society of Microbiology. He is the quality control director of the distinguished sherry house of Pedro Domecq S.A.

14.30-14.50 'AGEING OF SHERRY UNDER FLOR'

From the point of view of nature, the factors affecting the production of sherry are the micro-climate, albariza soil, the palomino grape and flor yeast; the factors due to man are the preparation of the soil, pruning, vinification, classifications and a series of other operations peculiar to sherry production, such as fortification, ageing systems etc. The flor yeast which grows on the surface of fino sherries covers its whole surface and isolates the wine from the outside atmosphere. The effect of this micro-organism is quite special and produces a series of transformations which give the finos their character. Ageing by the solera system is also complementary as it will allow the flor yeast to grow through the period of ageing because of the continuous contribution of nutrients of younger finos; at the same time the wine will suffer its normal physico-chemical ageing common to other types of sherry like amontillado, oloroso etc. The evolutions and transformations have been studied in five scales of fino (one of them a vintage) and four of amontillado on the micro-biology of the flor yeast, biochemical aspects, evolution of colour and organic acid, as vitamin enrichment.

DR. BRYCE C. RANKINE, South Australia

Dr. Bryce C. Rankine is Dean of the Faculty of Oenology at Roseworthy Agricultural College, South Australia, where oenology and viticulture have been practiced for almost 100 years. He has been involved with a wide range of teaching, research and extension activities in the Australian wine industry over the past twenty years, and has represented the industry at various international conferences and seminars. He has published over 150 scientific and technical papers on wine and is a national and international wine judge.

14.50-15.10 'FLOR: RECENT DEVELOPMENTS ON THE CLASSIC PROCESS'

An intricate succession of microbiological events, together with cask maturation and complex blending, make flor sherry one the world's remarkable wines. The classical Spanish process originally formed the basis for sherry production in Australia, South Africa and California, but its solera establishment and labour costs have lead to development of modified procedures. Firstly, surface flor growth in shallow covered tanks for 6-10 weeks at 15 to 22°C, followed by clarification of the wine and cask maturation. This process divides flor growth and cask maturation into two separate operations, and much Australian flor sherry is made by this technique. The tanks used are usually existing open-topped waxed concrete fermentation tanks, to which are attached sloping covers to prevent evaporation and exclude mesophilic. Secondly, submerged aerated culture in which the sherry-base wine is mixed with yeast (not necessarily flor yeast) in a closed vessel and aerated with or without stirring. The process takes 1 to 6 weeks, depending on rate of aeration, temperature and composition of the base wine. Acetaldehyde formation can be as high as 1,000 mg/l, and the wine is then blended with untreated wine and cask matured. The vessels are not designed specifically for submerged culture production and most flor sherry in California is made by this process. Thirdly, column technique in which sherry-base wine is percolated down a vertical column, (with or without recirculation), in which flor yeast grows on an inert support. During its passage the wine acquires flor yeast character and usually between 200 and 300 mg/l acetaldehyde. The wine is subsequently matured in casks. The process is rapid and effective, but needs control of aeration in the column and prevention of Acetobacter infection. Its main advantage is very rapid development of flor character. The highest quality flor sherry still results from the classical process, but it is expensive and the alternatives produce acceptable wines and value for money. Those produced by surface tank culture and percolation column are closer to the classical style than are those produced by submerged culture.

15.10-15.30 QUESTIONS

15.30-15.50 BREAK
SESSION 4 VINIFICATION 15.50-17.35 31ST MARCH

CHAIRMAN - P. J.-F. MILLET MW

PROF. JACQUES PUJSAIS, France

Prof. Jacques Puisais obtained his doctorate in science at the University of Poitiers. He is the Directeur du Laboratoire Départemental et Régional d'Analyse et de Recherches, Tours. He has been Président de l’Union Nationale des Oenologues since 1971 and Président de l’Union Internationale des Oenologues since 1973. He has contributed to 27 publications concerned with wine and is the author of two books.

WALTER SCHUG, California, USA

Walter Schug is Vice-President and Winemaker of Joseph Phelps Vineyards at St. Helena, California. He is a member of the Rund der Ingenieure der Winzhaus, Gränzenheim, West Germany; a member of the Napa Valley Wine Technical Group, California, USA; a professional member of the American Society of Enologists, lecturer to the Wine Library Seminars, St. Helena, California, and the Napa Valley Wine Symposium, Napa Valley, California; guest lecturer, University of California, Davis; general partner, Mountain Vintners, Calistoga, California, and owner with his wife Gertrude of Schug Cellars Winery, founded in 1980.

GÜNTER BROZEL & DAVID HUGHES, South Africa

Günter Brozel of the Nederburg Farmers Winery is a leading authority on this important subject in which great results have been achieved owing to his research. The paper will be read by David Hughes who works closely with Günter Brozel at Nederburg Farmers Winery. Günter Brozel’s personal attendance will be prevented by the vintage in South Africa coinciding with the Symposium.

15.50-16.10 ‘CLASSIC METHODS OF VINIFICATION’

Professor Puisais’ paper while confirming the influence of soil, oenage and climatic conditions upon the style of wine of different origins will refer to the disciplines laid down by the modern understanding of the scientific aspects of fermentation and vinification. It will refer in particular to the possibility of even more advanced presses to obtain musts with a low percentage of leses without an increase in the mineral elements coming from the solid part of the harvest. He will enlarge upon the fundamental importance of control during the fermentation of both red and white wine, especially in the production of fine wine, of which the purpose in the end is to enhance the time-honoured reputation of wines entitled to an appellation d’origine which have benefitted from being made by modern methods.

16.10-16.30 ‘VINIFICATION OF FINE WINE IN CALIFORNIA’

The brief history of California’s wine production is characterised by erratic growth patterns and serious disruptions. The current wine boom has the support of a good consumer base, sensitive marketing and production methods based upon highest technical principles. The industry owes its advanced status to the close co-operation and exchange of ideas among friendly competitors and the existence of regional organisations, the American Society of Enologists, the Wine Institute, and such fine institutions as the University of California and its unique extension system. The author explores the reasons for California’s diversified industry and the desire to extract excellence from many different grape varieties, combining traditional and modern practices with research and an open mind. Particular emphasis is placed on the application of variety-specific growing and production methods to develop harmonious, premium, varietal wines. Recent, sometimes over-dramatised, successes of Californian wines should not be taken out of context but as an indication that in the future the world library of fine wines will be complemented by California’s product.

16.30-16.50 ‘BOTRYTIS WINES IN SOUTH AFRICA AS DEVELOPED BY GÜNTER BROZEL’

One of the oldest wine producing regions outside Europe is that of the Cape of Good Hope. However, although the first wine was made from Cape-grown grapes by Jan van Riebeeck in 1659, the modern industry dates back only to the Liebersteind natural wine revolution which began in 1960. Prior to this, little natural wine was produced and, from the records available, botrytis wine was unheard of. This position was changed dramatically by Günter Brozel when he bottled and labelled for sale a product called edelkur for the first time in 1969. At that time, the law prevented natural wines exceeding 2% residual sugar from being sold. Günter Brozel’s persistence resulted in a Government notice making the first provision for such wines. The noble rot or botrytis is well known in Europe with the fine traditional wines of Sauternes, Germany and Tokay. Other New World wine regions like California and Australia are producing fine botrytis wines. In the Cape, botrytis existed as a disease and every year accounted for considerable damage to the crop. How to control this mould and allow it to produce grapes of the kind suitable to produce botrytis wines was the work of Günter Brozel over many years. Using various methods including picking the grapes and encouraging cultured growth in indoor, controlled climatic conditions, he found a method that would produce botrytised grapes completely naturally. Various varietals have been used. The versatile local steen (chenin blanc) has produced the best results to date. The 1982 vintage will mark the remarkable achievement of 10 consecutive vintages since 1973, very varied wines but all recognisable as edelkur. In the past two years at least ten producers have managed to make botrytis wine with varying degrees of success. One thing is certain: the Cape is going to be recognised very rapidly for these outstanding wines as pioneered by Günter Brozel.
16.50-17.10 'WINE YEAST STRAINS - WHICH AND WHY'

The controversy over the desirability of use of yeast starter cultures for commercial wine making seems to have been settled in favour of their use as compared to spontaneous fermentations. With their use there is need for less sulfur dioxide, the fermentations begin sooner, and the quality of the end product is more predictable. However, there is still much disagreement over selection of the various wine yeast strains. Of course, commercial availability of the strain is an important factor in making a selection. Other factors are the physiological characteristics which vary from strain to strain. Some of these characteristics include the tolerance of the strain to ethanol, to sulfur dioxide, to temperature; their demand for various nutrients; their flocculation ability; etc. The strains may affect the quality of the wines produced and allow for sensory recognition of the individual wines on basis of residual sugar, or on the formation of volatile acidity, hydrogen sulfide or acetaldehyde. These differences may be extremely small but large enough to be detected as aroma and flavor differences. The extent of the dependence of other flavor components in the wines, for example, odoriferous esters, upon the strain of yeast used in the fermentation is far from clear. Differences in ester formation by various wine yeast strains have been demonstrated; however, although these differences were significant, they were small and probably would not be detected sensorily. The importance of the individual yeast strains will surely become more evident in the future, with the application of genetic engineering principles to the improvement of wine yeast strains. The techniques for genetic alterations in yeast are already established, what remains is agreement upon desired new characteristics and development of methodology of selection of newly formed strains.

17.10-17.35 QUESTIONS AND CLOSE

18.15 FOR 19.00 DINNER (BLACK TIE)

SESSION 5 VINIFICATION 08.30-09.55 1ST APRIL

CHAIRMAN - P.J.F. MILLET MW

JEAN-PIERRE SABOYE, France

Jean-Pierre Saboeye, Ingénieur à l'Institut Technique de la Vigne et du Vin, was given the task of setting up the Cave Experimentale of the famous SICAREX-Mediterranean and conducting the research into vinification and technology there until 1981. He studied agronomic and agriculture specialising in viticulture and oenology at the Station de Recherche Oenologique de Branne and at the Lycée Agricole. In 1962, he obtained his certificate in oenology and the Diplôme National d'Oenologue at the University of Dijon.

8.30-08.50 'THE EFFECT OF THE VINIFICATION OF DIFFERENT GRAPE VARIETIES ON THE STYLE OF THE WINES OF THE MIDI'

In the last ten years the Institut Technique du Vin and the Sicarex-Mediterranean in collaboration have carried out much research into the best varieties for the Midi. Jean Pierre Saboeye will refer to the traditional Midi vines and the attempts to improve production with other varieties, alicate, cabernet sauvignon, syrah etc. He will refer to the intricate balance of colour, tannins, sugar, acidity and aroma, and the technical approach. He will refer to the advantages and disadvantages of maceration carbonique, the maceration of semi-crushed fruit and traditional maceration in determining the style of wine required to be produced; heating the must to assure an extraction of anthocyanins with weak tannins; regulation of fermentation at low temperature to produce fruity, fresh wines easy to appreciate etc.; the link between heating the must, maceration and fermentation to produce full-bodied wines with good keeping qualities. He will refer to the best results achieved recently in the production of rose, and the attempts to produce agreeable white wines for the pleasure of the new generation of wine consumers. The Midi of France, the centre of a great amphitheatre of vines facing the Mediterranean, is ideally placed to produce a wide range of wines to please everyone in all the circumstances in which wine is consumed.
SESSION 5...

08.50-09.10 'RECENT DEVELOPMENTS IN VINIFICATION IN PORTUGAL'

The wine industry is an important factor in Portugal's economy involving directly and indirectly more than 20% of the working population and contributing considerably to the generation of foreign exchange. Although Portugal is a small country, there has been a considerable growth in collective wineries over the last twenty years together with subsequent developments in technology. Modern methods of vinification of white, rose and red wines and port will be reviewed and discussed.

09.10-09.30 'THE VINIFICATION OF CHIANTI'

In the last ten years, there has been such a marked change from traditional methods that today the oenology of Chianti is among the liveliest, most interesting and advanced in Italy. To succeed in obtaining the style of wine growers want to produce, that is to say a 'new style' of Chianti, more 'charnu', more full-bodied, well-coloured, less harsh and better balanced, steps have to be taken (attempted by most people) at the vinification stage. Not so long ago, open chestnut vats were used for a fermentation carried out with the stalks. Wooden vats gave place to concrete, while today the most advanced producers use stainless steel vessels, which may be considered as small laboratories, in which it is possible to obtain, by controlling temperature, a wine of the style required by extracting the right amount of polyphenols, and controlling the fermentation in order to develop the malolactic bacteria (sometimes inoculated during the alcoholic fermentation). Sometimes, and for particular vintages, resort is made to old practices, that, for example, of adding stalks during fermentation, or press-wine after fermentation. Today, in Chianti, it is realised that oenology must be entirely based upon the microbiological or biochemical processes, which mostly take place during fermentation or in the very next stage: phenomena represented by the relation between temperature during fermentation and dissolution of phenolic compounds, temperature of fermentation and formation of the volatile compounds of wine, between the time of maceration and the possibility of malolactic evolution, and between the initial SO₂ content of a must (55/60mg. per litre) and polyphenolic extraction and development of malolactic flora.

09.30-09.55 QUESTIONS

09.55-10.10 BREAK
SESSION 6 TREATMENT & HANDLING 10.10-11.55 1ST APRIL
CHAIRMAN - E.M.B. HALE MW

PROF VERNON L. SINGLETON. California, USA
Prof. Vernon Singleton received his Ph.D. in agricultural biochemistry (fermentation and proteins) at Purdue University in 1951. He joined the Department of Viticulture and Oenology at the University of California, Davis, in which he is now Professor of Oenology. He is a past president of the American Society of Oenologists, a life fellow of the American Institute of Chemists, a professional member of the American Chemical Society, the Institute of Food Technologists and several other societies.

10.10-10.30 'OXIDATION OF WINE'
From his classic studies, Pasteur concluded "c'est l’oxygene qui fait le vin." Since, knowledge has increased, but the oxidation of wine is not fully understood. Important roles have been claimed for metal ions, dihydroxyacetic acid, and organic peroxides. Current findings attributing a central role to wine phenolics will be outlined. Some oxygen dissolves in wine upon air contact. If further air is then excluded, the oxygen gradually disappears and eventually a low "rest" oxidation-reduction potential is re-established. The process can be repeated. Oxygen contact is more or less inevitable during bulk maturation and processing, but, after any headspace oxygen is consumed, autodissolution is prevented in bottled wine. One important reason that bottle ageing produces results different from bulk maturation is protection from air. Justification for the following statements will be outlined. Oxygen does not, contrary to previous opinion, penetrate to wine through the sides of full barrels. The reaction of wine with oxygen is autocatalytic. The phenols are the main natural substrate of autodissolution in wines. Oxidations that otherwise would not occur can be produced by coupling with the autodissolution of wine phenols. About 10 saturations mark the transition between a white table wine showing oxidation and a sherry. A similar level or more gives maximum quality with red wines. Oxidations at a high pH are much faster and can indicate total capacity for oxygen. However, oxygen consumption under normal pH is greater than the proportional decrease in oxygen capacity at high pH. A hypothesis capable of explaining these observations will be outlined.

PIERRE JULIEN. France
Pierre Julien, Ingénieur Agronomie, Oenologue, is the Director of Domaines Viticales de la Compagnie des Salins du Midi et Salins de l'Est, France's largest wine-producing property.

10.30-10.50 'BULK STORAGE OF WINE: STAINLESS STEEL VERSUS ALTERNATIVES'
Pierre Julien will review the special needs of each type of bulk storage (fermentation, blending, treatment, storage, racking). He will consider the special needs of bottler, negociant-éleveur and producer, bearing in mind practical advantages and disadvantages, useful purpose, total cost per hectolitre (investment/maintenance/ upkeep). The make-up of a cuverie covering trade needs and the choice of Listel will be mentioned.

GUENOLE MILLOUR. Spain
Guénolé Millour was brought up in the Chablis district and has since settled in Spain. He is the export manager of the Codorniu Group of Companies, the world's largest producers of sparkling wine by the champagne method, centred in Barcelona.

10.50-11.10 'THE FUTURE FOR THE METHODE CHAMPENOISE'
Apart from locally well-known sparkling wines, such as Blanquette de Limoux, Clairette de Dieu, Asti spumante, etc., champagne has been, for three centuries, the only sparkling wine enjoying worldwide fame. The very wise policy of the champagne producers, limiting the area of the vineyards, reducing the yield per hectare, strictly controlling the production, has given to this wonderful product, of which nobody would dispute the quality, a prominent place amongst the good things of this world. Now, this malthusian policy, which has unquestionably added to the prestige of champagne, has also created a certain scarcity which, automatically, has put the "King of Wines" beyond the reach of many would-be consumers. Hence a lot of sparkling wines have been created, using either the traditional method or other ingenious ways of bulk fermentation. In certain countries even carbonated wines were put on the market. Unfortunately, there were no strict rules for the production of these wines and the public is not conscious of the differences amongst them; many "mousseux", "spumanti", sekt" and other "igristoi" have only the shape of the bottle in common with the genial invention of Dom Perignon. But the world demand for sparkling wines of quality goes up and the champagne can satisfy only a small part of the growing market. There is no longer best champagne and the other sparkling wines. Some individual or corporate campaigns, some laws defining and organizing the control of certain types of quality sparkling wines (Spain 1972 on "Cava" France 1975 on "Cremant") have changed the mind of many customers and convinced them that a wine of less prestigious origin processed by the methode champenoise is an acceptable alternative to champagne.
SESSION 6...

W. H. SUTER MW, UK.

Hugh Suter joined the wine trade and Grants of St. James's in 1967 after leaving school. After training in handling and bottling at depots in Burton-on-Trent and Stockport, he worked at Grant's main bottling plant at Guildford from 1970 to 1974 as supervisor of bulk wine receipts and vattting. After a period involved with quality control, he was appointed manager in 1978 responsible for all aspects of the company's quality from supplier to customer. After winning several wine trade scholarships, he passed his Master of Wine Examination in 1977. He sits on the Technical Committee of the Wine and Spirit Association of Great Britain.

11.10-11.30 'TRANSPORT OF WINE IN BULK'

This paper will look at the history and development of bulk wine shipments, but the main emphasis is on modern methods and their effects on wine quality. Costs and legal parameters will also be discussed as will future developments. Points to be examined will include the main types of bulk carrier, their construction and operating costs, the facilities needed by both haulier and importer, e.g. sterilisation equipment and tank storage, and the legal aspects that have to be met. The role of the specialist haulier will be discussed. Wine preparation, specification and handling will be discussed as well as the potential pitfalls of bulk transport, such as inadequate cleaning, microbial and chemical contamination and oxidation and the ways of avoiding these. Mention will be made of the Codes of Practice drawn up by U.K. wine shippers and bulk wine carriers and ship owners with specific reference to imports to the U.K. The relative merits of bulk and bottled wine transport will be examined from quality and cost angles. The requirements that have to be met to maintain wine quality during bulk transport will be discussed. The image of bulk wine transport in the eyes of the public will be mentioned and finally a look will be taken at possible future technical developments, legal requirements and economics.

11.30-11.55 QUESTIONS

12.00-12.50 TASTING OF CABERNET FROM INTERNATIONAL SOURCES

13.00-14.00 LUNCH

SESSION 7 TREATMENT & HANDLING 14.30-16.00 1ST APRIL

CHAIRMAN - D.F. STEVENS MW

Fritz Neradt: West Germany

Fritz Neradt has very considerable experience in the wine industry. He did his apprenticeship at Schloss Johannisberg, at Eltville in the Rheingau and in various other German wine districts. He graduated at Geisenheim. He spent 6 years working as a wine chemist in London, before joining Sitz-Werke GmbH, Bad Kreuznach, where he has been the head of the wine and spirit laboratory since 1974.

14.30-14.50 'MODERN BOTTLING TECHNOLOGY WITH PARTICULAR REFERENCE TO FILTRATION'

Of the three major bottling techniques, hot bottling, cold sterile bottling with the addition of sorbate, and cold sterile filling, the latter is primarily discussed. Whereas hot filling undoubtedly has its applications, sorbate is associated with a number of negative aspects such as its inherent odour and somewhat limited reliability. Cold sterile filling is the preferred method from a quality point of view. However, the procedure demands well-trained operating personnel, equipment designed for the task and more stringent quality control. In bottle sterilization, new types of machines have been modified for the use of sterilizing agents other than SO2. Ozone, as the latest substitute, is covered in more detail. Based on a large number of microbiological analyses, the various reinfecution sources, along with technical and procedural improvements, are illustrated. Reference is made to recent technical and technological advances in conjunction with low vacuum fillers and single chamber as well as three-chamber pressure fillers. Here the main subjects are adjustment and accuracy of fill heights, oxygen pick-up and CIP principles. Non-asbestos filter sheets and membrane filters are not exactly new developments. Yet there are still a number of problems either of technological or economical nature. These are primarily bacteria retention with non-asbestos sheets, premature blockage of membranes and mechanical failure of membrane cartridges.
SESSION 7...

GIACINTO GIACOMINI, Italy

Enotecaico Giacinto Giacomini of Cevico, Tiento holds the Diploma of the Instituto Tecnico Agrario Superiore of Conegliano Veneto, 1964, and is a member of the technical committee of the Federazione Italiana Cantina Sociali.

14.50-15.10 'COLD STERILE BOTTLING VERSUS ALTERNATIVES'

The ethyl alcohol which forms during the fermentation of must has a noticeable inhibiting effect on the micro-organism which can live in wine. However, it cannot always be taken for granted as biologically stable. The residual sugars, noticeably present in medium wines and abundantly so in sweet wines, plus the malic acid, found in relatively concentrated amounts in the produce obtained from mature grapes from the regions in the north, particularly those at a high altitude, are the two substances most susceptible to attack from microbes. The first and second are creating opposing problems to the wine industry. In the villages where the traditional methods of wine-making are still observed, consumers tend to drink less but better quality. This move towards quality is characterised by an increasing preference for dry wine, but, above all, among white wine, those which have a distinctly fruity flavour as well as being fresh and young. Thus, the amount of sugar has decreased whereas it has had virtually the opposite effect on malic acid. One of the ways that is widely used to guarantee the biological stability of wine is sterile filtering, in particular the method used when the wine is cold, by which we mean room temperature, or at any rate considerably cooler than its temperature at pasteurization. This destroys the bacteria and yeast responsible for the transformation of the substances already mentioned. There are various problems to overcome when using sterile bottling, in particular there tend to be practical problems in cellars where there is a limited amount of space. However, as yet, there is no sign of a solution among the other alternatives to this process.

ALAN C. SIMPSON MBE, B.Sc. UK

Alan Simpson is head of Group Technical Services of International Distillers and Vintners Limited. He studied chemistry at the University of Bristol and worked for a number of years in research and development in wines and spirits. He is Chairman of the Technical Committee of the Wine and Spirit Association of Great Britain.

15.10-15.30 'ALTERNATIVES TO CORK AND GLASS'

Cork was used as a closure for vessels such as wine amphorae in Roman times, but the breakthrough in packing for wine came at the end of the seventeenth century when the legendary Dom Perignon fashioned a pressure-tight seal between cork and glass. Cork and glass have held sway in the wine trade ever since, allowing fine vintages to ripen and mature to the benefit of connoisseurs everywhere. In 1982 little has changed for fine wines but for cheaper everyday wine alternative forms of packaging are appearing on the supermarket shelves. These developments in the U.K. have been overshadowed elsewhere: in the traditional countries of high consumption with PVC bottles and screw closures; and in the more innovative new producing countries like Australia and South Africa with bag-in-box. While cork and glass may be retained for reasons of tradition or market appeal, the new forms of packaging have to meet several well-established criteria if they are to qualify in the wine trade. The most fundamental is the absence of any toxic or harmful contamination. Others relating to technological performance include effective liquid-tightness, gas-barrier properties which limit the entry of oxygen and the loss of carbon dioxide flavour, convenience of handling, storage and opening by the consumer, suitability for production within the trade, and finally, but by no means least, economic justification. In a world which is becoming used to technological innovation and change we cannot expect packaging to remain static. The new forms of packaging are likely to be improved still further through the development of better materials; but we can expect to see other alternatives to cork and glass on the shelves in the years ahead.

15.30-16.00 QUESTIONS

16.00-16.10 BREAK
SESSION 8 TREATMENT & HANDLING 16.10-17.35 1ST APRIL

CHAIRMAN - P.J. LLOYD MA MW

FRANCO KETTMEIR, Italy

Dr. Franco Kettmeir obtained his doctorate in economic sciences at Milan University in 1962. He studied enology at Geisenheim and San Michele all'Adige. He is now the third generation to run his family's firm in Bolzano, Alto Adige.

16.10-16.30 'QUALITY CONTROL FOR DOC & DOCG WINES'

There is a large number of DOC and DOCG wines in Italy which is not surprising considering that it is the largest wine producer in the world. That is why Italy had to hurry up in the last 18-19 years to give a juridical base to the quality wines which had been produced for thousands of years without being specifically classified. This category of better wines is differently specified and classified in the different wine producing countries. By "appellation d'origine" we mean the geographic denomination of a country, a region or a specified place which we use to classify a product (the wine) which (1) originates in that specified zone, and (2) has quality characteristics which depend exclusively or primarily on the geographic region together with the natural and/or human factors. Although the law of 1963, the juridical base for the birth of DOC wines, does not comply exactly with the EEC regulations (especially with the EEC regulation 338/79 ex 817/70), the legislation has had very positive effects. The DOC wines recognized in Northern Italy, Central Regions and the South had a different effect for every DOC denomination. The justification of the discrepancy is the very different historical, commercial and social development of the different regions. The justification for a vineyard to be recognized as DOC is its inclusion in the Wine-Register. The producer has the right to produce the single DOC wine if the quality does not exceed the maximum production. A tolerance of 20% is allowed with division of the total grapes quantity in the DOC production and the excess production which has to be sold as table wine. Quality, depending upon the natural sugar degrees of the grape, also has to be controlled. For every DOC grape a minimum sugar degree level has to be respected in order to comply with the production regulations. In fact, Italy has less problems than other wine producing countries considering its good and sunny EEC imports; the planned tasting commissions had to be created in order to control every DOC wine and every wine- cellar, from time to time eliminating the wines which cannot be considered up to standard. But every wine connoisseur knows that no government control can be perfect and the guarantee for the consumer is given mostly by the reliability of the wine companies.

DR. HANS AMBROSI, West Germany

Dr. Hans Ambrosi is the Director of the Staatseinrichtung at Eltville in the Rheingau. Both his grandfather and father were growers. After receiving his Doctorate at the Geisenheim Agricultural Institute, he lived in South Africa from 1955 to 1966 and worked at the University of Stellenbosch. Dr. Ambrosi was the co-founder of the German Wine Academy at Kloster Eberbach.

16.30-16.50 'THE CLASSIFICATION OF GERMAN WINES, VINEYARD AND CELLAR METHODS TO ACHIEVE IT'

The German classification system of wines, distinguishing seven quality classes, has developed very gradually over the course of centuries and is now embodied in the Wine Law of 1971. The first recognition of quality classes dates back to the 16th century, calling inferior wines "huns" and better quality wines "frans". During the 16th century, wines originating from certain trade-centres achieved a preference, whilst as early as the 17th century, the appearance of individual vineyards of designated quality is documented. From 1730 onwards, the name of "cabinet" was introduced for wines of selected quality. The term "Spatlese" (late harvest) was born in 1775 when wines were made of over-ripe grapes harvested unusually late. Contrary to the AC-system of France and the DOC system of Italy, the German system does not classify wines solely due to their place of origin. Three qualification tests are of vital importance for the classification of German wines: 1) harvesting inspection 2) chemical analysis report and 3) sensory examination. The allocated AP number (National Certification number) guarantees that the criteria for the designated quality level have been met. Wines of the same vineyard can, according to the vintage year, reach the lowest as well as the highest quality classes. The methods of treatment in vineyard and cellar which are necessary to achieve the different quality classes are described in detail. Besides the minimum requirements to determine quality as fixed by law, the producer has a free choice of different viticultural and oenological methods to influence the quality of grapes.
G. J. E. Jameson CVO MW, UK

Geoffrey Jameson entered the British wine trade in 1945, joining his father in the family firm K. E. Jameson, fine wine merchants in London. He became one of the first six Masters of Wine in 1953. He was appointed Clerk of the Royal Cellars in 1965, an appointment he kept until 1979. He became managing director of Justerini & Brooks Ltd in 1968, the position he still holds. Since 1974, he has been on the Court of the Vintners' Company, of which he is now Master for 1981/1982.

16.50-17.10 'ETHICS IN THE CONTEXT OF THE WINE INDUSTRY'

17.10-17.35 QUESTIONS

17.35 CLOSE OF SYMPOSIUM