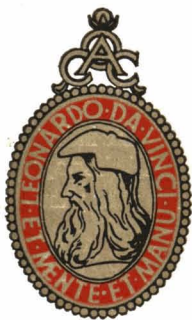


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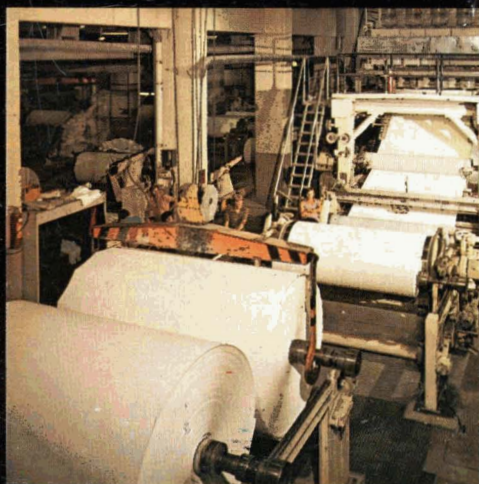
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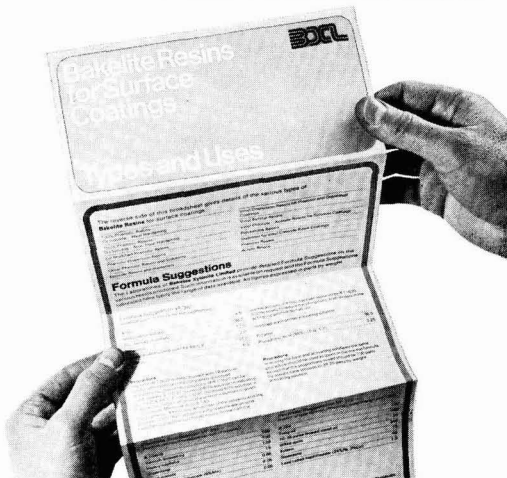
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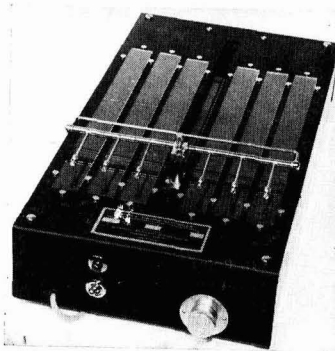
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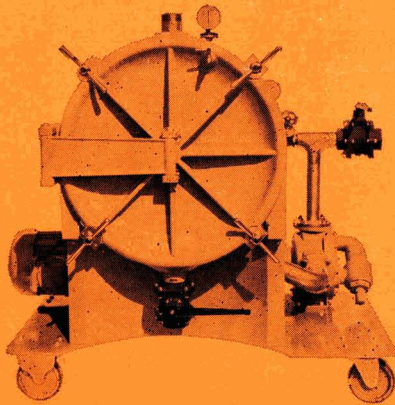
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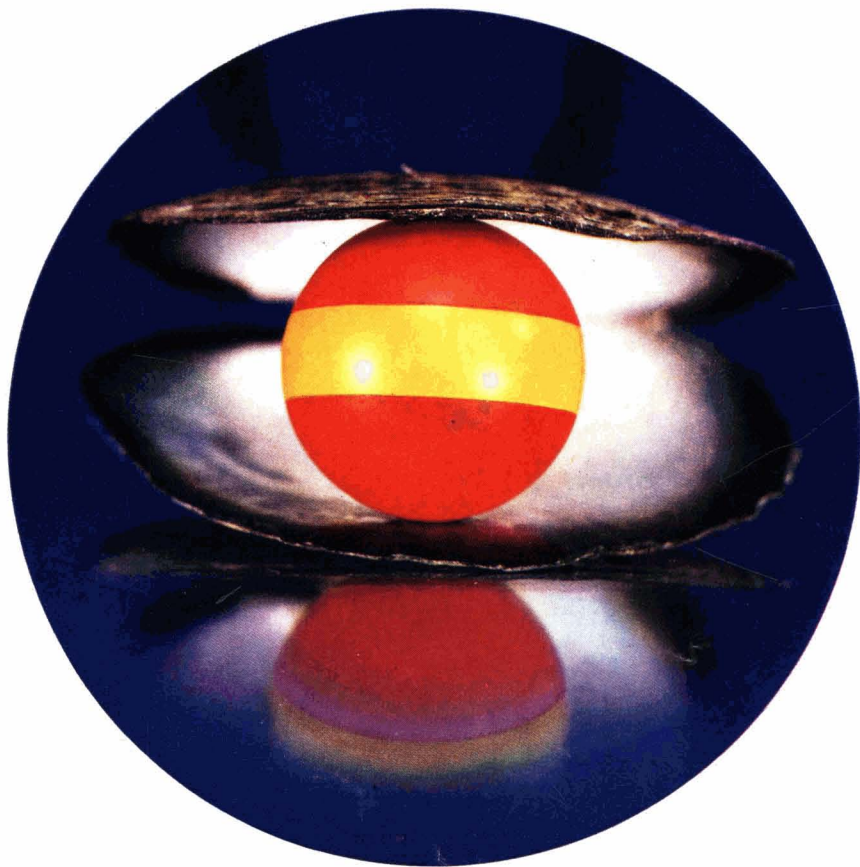
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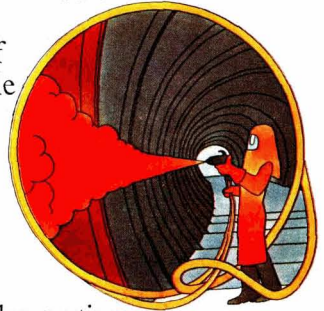
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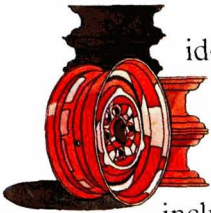
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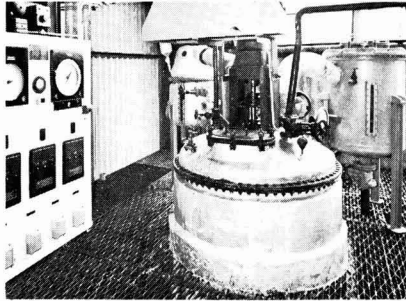
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Transactions and Communications

Radiochemical investigation of ionic penetration into paint films

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Summary

An investigation of ionic penetration into a coating material versus pigment volume concentration (PVC) has been carried out. For all experiments, a radiochemical method has been used, which is based on tagging of the coating surface by an aqueous isotopic solution of cation and anion, followed by measurement of the radioactivity present at various depths in the coating. The removal of layers of the superficially tagged coating was carried out by abrasion under controlled conditions.

The coatings are model styrenated alkyd paints pigmented with

red iron oxide within the range 10 to 60 per cent PVC; radioisotopes employed are strontium 90 and chlorine 36 ions.

Intense penetration of the strontium cations is indicated, with negligible penetration of the chlorine anions. The penetration of strontium ions is noticeably affected by PVC.

The method applied in these experiments allows the determination of approximate values for diffusion coefficients.

Keywords

Processes and methods primarily associated with analysis, measurement or testing

diffusion
ionic penetration
radiochemical method

Properties, characteristics and conditions primarily associated with dried or cured films

permeability

Miscellaneous

isotope

Résumé

Des essais ont été faits sur la pénétration des ions à l'intérieur de la matière des peintures en fonction de la concentration volumétrique du pigment (CVP). Dans les essais on utilise la méthode radiochimique, qui consiste au marquage superficielle à l'aide d'une solution aqueuse d'un isotope en forme cationique ou anionique, et ensuite à la détermination de la radioactivité aux différents niveaux à l'intérieur du revêtement. L'enlèvement des couches successives du revêtement superficiellement marqué a été effectué par abrasion sous les conditions contrôlées.

Les essais ont été faits à l'aide des revêtements modèles des peintures

à base de résines alkydes-styrénés pigmentés à l'oxyde de fer, dans la gamme 10 jusqu'à 60 % CVP, et des radioisotopes Sr⁹⁰ et Cl³⁶ sous forme ionique.

On a constaté une forte pénétration du cation Sr, une négligeable pénétration de l'anion Cl ainsi qu'une remarquable dépendance de la pénétration de l'ion Sr vis à vis de la CVP.

Cette méthode permet la détermination approximative des coefficients de diffusion.

Radiochemische Untersuchung des Ionischen Eindringens in Lackfilme

Zusammenfassung

Es wurden Untersuchungen der ionischen Eindringung in ein Anstrichmaterial unter Berücksichtigung der Pigmentvolumenkonzentration (PVK) vorgenommen. Bei allen Untersuchungen wurde eine radiochemische Methode angewandt. Diese bestand darin, dass die Anstrichoberflächen durch eine wässrige Lösung von Kation- und Anion-Isotopen markiert wurden mit anschließender Messung der in den verschiedenen Tiefen Schichten des Anstrichfilms vorhandene Radioaktivität. Die Entfernung der Schichten des oberflächlich markierten Anstriches erfolgte durch kontrolliertes Abreiben.

Die verwendeten Lackfarben sind Modelle von styrolisierten, mit Eisenoxidrot pigmentierten Alkydharzlösungen mit einer innerhalb von 10 bis 60% liegenden PVK; als Radioisotopen wurden Stront 90- und Chlor 36-Ionen verwandt.

Es zeigte sich, dass Strontium-Kationen intensiv, die Chlor-Anionen dagegen nur minimal eindringen. Die Eindringtiefe der Strontium-Ionen hängt merklich von der PVK ab.

Die für diese Versuche eingesetzte Methode ermöglicht die Bestimmung ungefährender Werte für Diffusionskoeffizienten.

Содержание

Проведено испытания пенетрации ионов вглубь материала покрытия красок в зависимости от пигментной объемной концентрации. Применен в испытаниях радиохимический метод был основан на заражении поверхности покрытия водным раствором изотопа в анионном или катионном виде, а после этого на определении радиоактивности на различных уровнях в глубине покрытия. Снятие очередных слоев зараженного поверхностно покрытия проведено путем истирания при контролируемых условиях.

В испытаниях применено модельные покрытия алкидно-стиролованных красок, пигментированных с железным суриком в размере от 10 до 60% пигментной объемной концентрации и радиоактивные изотопы Sr⁹⁰ и Cl³⁶ в ионовом виде. Удостоверено интенсивную пенетрацию катиона Sr и незначительную аниона Cl, а тоже значительную зависимость пенетрации иона Sr от пигментной объемной концентрации. Применен метод испытания позволил определить приближенные величины коэффициентов диффузии.

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Introduction

Refs. 1-12

The appearance of numerous papers concerning the application of radiochemical methods in paint research and testing, indicate their usefulness for this purpose. Some of these methods have been used to examine the diffusion phenomenon or permeability of paint films. Such examinations can be performed basically in three ways. In the first case, a coating in the form of unsupported film is used as a membrane between two containers one of which is filled with a tracer solution and the other with an appropriate solvent.¹⁻³ The second method is based on the preparation of autoradiograms after tracer penetration into the paint film.^{4, 5} The most interesting, however, is probably the third method, which consists of the tagging of a dry coating surface with an isotopic solution and then, in a direction horizontal to the plane of the coating, scrubbing, slicing or abrading, in some controlled manner. On the successive removal of several layers of the coating of known thickness, the activity of the traced area can be measured.⁶⁻⁸ The procedure for removal of layers, which is known as "division into segments", finds general application in the examination of diffusion in solids and has a broad theoretical and mathematical support.⁸⁻¹² Such a method has been used in the work described below.

Theory

The general formula for the diffusion phenomenon which takes place in an isotropic, semi-infinite solid takes the form:

$$C_{(x, t)} = \frac{C_0}{\pi Dt} \exp(-x^2/4 Dt) = H \exp(-x^2/4 Dt) \dots (1)$$

- where *C* = concentration of diffusing substance at depth *x*
- C*₀ = initial concentration at *x* = 0
- D* = diffusion coefficient
- t* = time of diffusion
- H* = constant pre-exponential factor.

As can be seen, *C* as a function of *x* and *t* is described by the expression $\exp(-x^2/4 Dt)$ only.

After taking logarithms of the above equation, a more convenient form is obtained:

$$\ln C = \ln H - x^2/4 Dt \dots \dots \dots (2)$$

which connects the logarithm of concentration *C* with the square of diffusion depth. The graph of this equation is a straight line of slope equal to tangent α . This allows the derivation of the expression for the diffusion coefficient

$$D = -1/(4 t \tan \alpha) \dots \dots \dots (3)$$

In the case of the diffusion of an isotope, it may be assumed that its atoms are evenly distributed among other atoms of the diffusing element, and that the activity data may be considered directly proportional to the concentration of all diffusing atoms present within the solid. The concentration *C* in the equations (1) and (2) may be replaced, therefore, by activity *N* of the radioactive tracer. This is expressed by a new equation as follows:

$$\ln N = \ln H - x^2/4 Dt \dots \dots \dots (4)$$

The activity of successively removed layers of the solid is determined by the activity measurements before and after the removal of each layer; that is, by the activity difference ΔN between adjacent layers

$$\Delta N = \frac{N_n - N_{n+1}}{Fx} e^{-\mu x} \dots \dots \dots (5)$$

where *x* = thickness of removed layer

- N*_{*n*} and *N*_{*n*+1} = sample activity after removal of *n*th and (*n*+1)th layers
- F* = area of the tagged surface facing the Geiger-Mueller detector
- μ = coefficient of linear radiation decrease with the layer thickness.

The above equation can be simplified because the factor $e^{-\mu x}$ may be neglected. This is the case when the thickness *x* of the examined layer is sufficiently small, and because the coefficient μ of linear β -radiation absorption, evaluated according to the empirical equation ($\mu = 0.0152/E_{max}^{1.1514}$) also has a negligible value.

When the area *F* and thickness *x* of successive layers removed are identical, the formula (5) can be further simplified, giving finally the form:

$$\Delta N = N_n - N_{n+1} \dots \dots \dots (6)$$

The value of ΔN may be related to the square of diffusion depth by the expression:

$$\ln \Delta N = \ln H - x^2/4 Dt$$

The application of the above equation in practice consists of obtaining values of ΔN between several layers of the same thickness, which are successively removed from the solid's surface by means of mechanical action. After preparing the plot of $\ln \Delta N$ versus x^2 , which represents the straight line, the slope ($\tan \alpha$) is found. Knowing the time of diffusion, the diffusion coefficient *D* may be simply calculated by using equation (3).

Experimental

Paint coatings

Model styrenated alkyd coatings pigmented with red iron oxide at successively increasing PVCs of 10, 20, 30, 35, 40, 45, 50 and 60 per cent were used. The fineness of pigment particles as measured by the Hegman gauge was nearly 10 μ m. The coatings were applied on glass plates 100 \times 100mm using a centrifugal applicator, the ICI "Sheen spinner". After complete drying, the thickness of every coating was measured by the use of Zeiss optimeter. The thickness of all coatings varied between 40 and 50 μ m.

Solutions of isotopic substances

Two isotopes have been used in ionic form: anion Cl³⁶ (aqueous solution of NaCl³⁶), and cation Sr⁹⁰ (aqueous solution of Sr⁹⁰Cl₂). The NaCl³⁶ and Sr⁹⁰Cl₂ solutions had the specific activities, respectively, 6.0 \times 10⁻⁴ and 5.0 \times 10⁻⁴ curie cm⁻³, and pH values 6.9 and 6.5 respectively.

Manner of tracing

On each coating surface the small plastic ring of internal diameter 8.0mm was cemented with an appropriate adhesive. In each of these minute containers 0.4cc portions of the tracer solutions were placed. The tagged area was located exactly on that part of examined surface which was to be abraded and radiometrically tested (Fig. 1).



Fig. 1. Location of the area of tagging

The samples with the solutions of tracers were then introduced into a thermostatically controlled humidity chamber at 100 per cent RH and $20 \pm 2^\circ\text{C}$ for 8 days. The isotopic solution was then sucked off by the use of a remotely controlled manipulator, and the traced area rinsed thoroughly with distilled water. After removal of the plastic rings, the samples were allowed to dry for 7 days at room temperature.

Activity measurements

Ref. 13

All activity measurements were carried out by means of the Geiger-Mueller detector connected to an electronic counter. The detector was shielded by lead plate with an opening of the same diameter as that of the traced area of coatings.

After measurement of initial activity, the coatings were abraded within the area of a ring 10mm wide, which included the tagged place. The abrasion procedure was carried out by means of the Taber Abraser—an instrument which is used, according to ASTM, to determine abrasion resistance of various materials and paint coatings.¹³ The technique of abrasion by the use of this apparatus is illustrated in Fig. 2. The glass plate with a paint coating attached is rotated at constant speed in a horizontal position, and rotates two calibrated abrasive rings lying on the surface of the plate. The vacuum suction pipe removes dust which is formed during the abrasion procedure. All the dust is collected in the dust container lined with a paper bag. The number of abrading cycles can be programmed and counted by a built-in counter.

The method described above allowed the removal of successive film layers in the standard manner giving highly reproducible results. In this way layers of the coating, on an average of $2\mu\text{m}$ thick, were removed and the remaining activity of the traced area was measured. The abrasion procedure was continued in steps of $2\mu\text{m}$ thickness until the

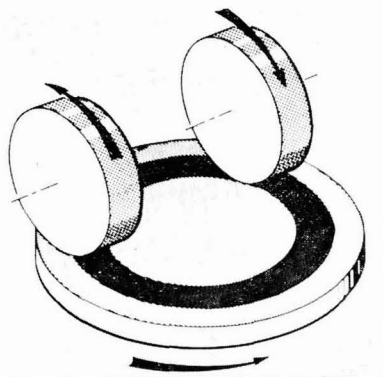


Fig. 2. Technique of abrasion by the use of a Taber Abraser

activity of the tagged area had fallen to double the blank value prior to radioactive tagging. Each layer activity was calculated from the difference of activity measured before and after the layer removal.

Sources of errors

The abrasive rings of the Taber Abraser, although they were cleaned and radiometrically checked after every operation, could transfer some activity from a preceding layer on to the subsequent one. To avoid the errors arising from this, the activity measurements were carried out not only on the tagged area but also on the most distant part of abrasion track that had not been previously tagged. The difference between these two measurements was taken into consideration. The specific activity values of each separate layer, which were used in the calculations, were taken from the plot of total activity of the tagged area versus total thickness loss of the separate coatings at various PVCs.

The Zeiss optimeter which was used to measure the coating thickness gave the precision of readings equal to $0.5\mu\text{m}$. This device has been found to be insufficiently accurate with regard to the $2\mu\text{m}$ thickness loss corresponding to each layer. Precise measurements were also restricted by a relatively low degree of dispersion of pigment particles and also by the

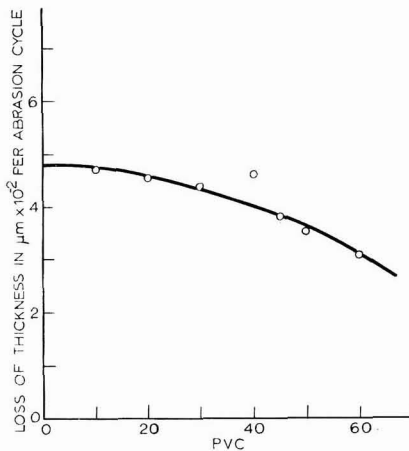


Fig. 3. Loss of thickness per one abrading cycle versus PVC

roughness of the surface caused by abrasion procedure. The thickness measurements were performed, therefore, not after each layer removal but after the removal of all (up to 9) layers, which corresponded with 300-400 abrading cycles and about $18\mu\text{m}$ total thickness loss. Dividing this thickness by the total abrading cycles, the mean thickness loss per cycle was obtained. It was found that these values differed for coatings of various PVCs (Fig. 3).

The differences in the abrasiveness of the coating material at various coating depths have been neglected.

Results of investigation

Ref. 14

Determination of the diffusion coefficients of Cl^{36} into the coating material showed that the penetration of this ion was

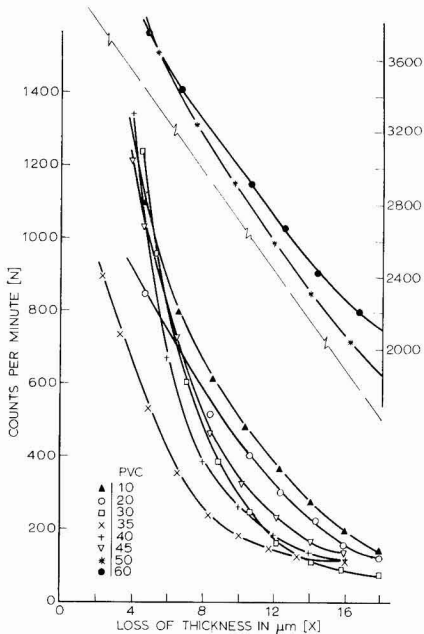


Fig. 4. Plot of activity versus coating thickness loss for various PVCs

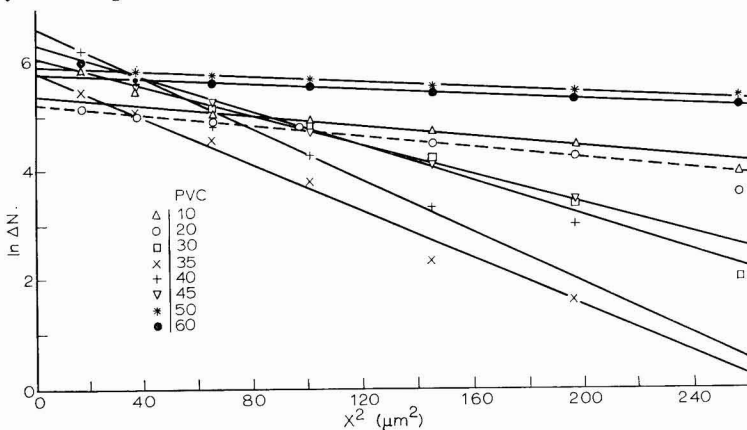


Fig. 5. Plot of $\ln(\Delta N)$ versus square of coating thickness loss

practically nil. After the removal of only one coating layer, approximately $2\mu\text{m}$ thick, the activity of the traced area was equal to a blank in the Geiger-Mueller detector. On the other hand, intensive penetration of Sr^{90} into the coating material was observed.

Curves representing the plot of activity data versus the coating thickness loss for every PVC were prepared (Fig. 4). Using the data taken from these graphs, the plots of $\ln \Delta N$ versus square of thickness loss were obtained. These had the form of straight lines of different slopes for every PVC value (Fig. 5). The diffusion coefficients were calculated from the gradients of these curves for coatings of various PVC. The lowest values occurred in the region corresponding to CPVC of red iron oxide in alkyd binder. CPVC for such systems evaluated by other methods was found to be equal to 35-40 per cent.¹⁴ The highest values of diffusion coefficient were found for the coatings reaching the maximum PVC, and the values were intermediate for the lowest concentration of this pigment. For all the PVCs used in the experiment, the diffusion coefficients lay between 10^{-12} and $10^{-13} \text{ cm}^2 \text{ s}^{-1}$.

Discussion

Refs. 15-17

Taking into account that the experimental and calculating procedure might be subject to incidental errors, only the order of magnitude of the determined diffusion coefficients is discussed. The results obtained so far, however, permit a consideration of the mechanism of ionic penetration into coating material. For example, the negligible penetration of the anion and intensive penetration of the cation is in agreement with results of other workers¹⁵⁻¹⁷ using electrochemical methods who have observed that during the immersion of alkyd coatings in water, this polymeric material acquired a negative charge causing selective permeability for ions. The presence of this negative charge was the result of ionogenic functional groups being able to dissociate, particularly the carboxylic groups.

It may also be concluded that when the concentration of pigment in the coating material is low, the diffusion of the cation depends on the activated diffusion phenomenon. Such a diffusion is associated with attraction of cation by free anionogenic groups, causing its migration through the polymer film by a shift or jump from one site to another. When the

concentration of the pigment increases, however, the charges become less dense and the influence of physical factors, for example the degree of pigment dispersion or packing of pigment particles, begins to have a dominating influence.

According to this explanation, the lowest diffusion coefficients were observed at critical pigment volume concentration. The further increase of PVC caused an increase in the permeability of the coating because of the relative decrease in the binder percentage, and also presumably, because of the presence of incidental macroscopic pores due to the polymer deficiency.

It would seem that the radiochemical method described may be an important practical tool for the assessment of several parameters which are deciding factors in the protective properties of paint coatings.

Acknowledgement

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Convenience in wallcoverings*

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Summary

Convenience is becoming increasingly important in the marketing of wallcoverings, so that the various ways which have been, are being, and may be used to achieve and improve this are examined and discussed.

Pre-pasted wallcoverings are now on the market and the ways in which these are produced are described.

Semi- or completely strippable systems have been the subject of

Keyword

Miscellaneous
wallcovering

Le "pret à poser" dans le domaine des papiers peints et des matières connexes

Résumé

La facilité à poser est un aspect qui devient plus en plus important à l'égard du marketing des papiers peints et des matières connexes. Donc, on discute et apprécie les divers moyens que l'on a utilisés, et que l'on utilise encore ou que l'on pourrait utiliser afin de l'atteindre et de l'améliorer.

Des papiers peints et produits semblables sous forme précollée se trouvent actuellement sur le marché et l'on décrit les moyens par lesquels on les produit.

Bequemlichkeit beim Anbringen von Wandbekleidungen

Zusammenfassung

Für das Marketing von Wandbekleidungen wird der Gesichtspunkt der Einfachheit immer wichtiger; infolgedessen wurden verschiedene Methoden, die benutzt wurden, benutzt werden oder deren Anwendung hierfür möglicherweise in Frage kommen oder verbessert werden könnte, untersucht und zur Debatte gestellt.

Vorgepastete Wandbekleidungen werden jetzt im freien Verkauf angeboten. Ihre Herstellung wird beschrieben.

Auf den Gebieten von halb-oder völlig abziehbaren Systemen

Introduction

Improved convenience for the user has become an important property of wallcoverings in the last few years. Some of the factors involved, such as washability, smearproofness, and pre-pasting, have been improved by an obvious desire to increase and improve the product's performance and so make it more successful in the market place. This in turn has necessitated development work, particularly on removability or strippability, since by increasing product performance in terms of smearproofness and washability the already difficult problem of removability by soaking is obviously made many times more difficult.

The convenience factor has received considerable attention in two particular areas, namely the ease with which the wallcovering can be put on, and the ease with which it can be taken off. Although, as will be seen, it is very difficult to dissociate the two areas, improved ways of putting on wallcoverings will first be discussed.

considerable development and this has resulted in numerous ways of achieving the desired properties. Some of these methods are mentioned in relation both to convenience and to the point at which the system breaks down.

One possible future method is presented, which involves the use of a novel system for obtaining a completely "dry-on/dry-off" wallcovering.

Des systèmes pelables ou semipelables ont été le sujet d'un développement important qui a abouti aux plusieurs moyens pour assurer les propriétés souhaitées. On mentionne certaines de ces méthodes à l'égard de la convenance et à la fois du point où le système échoue.

On présente une méthode éventuelle à l'avenir, qui entraîne l'emploi d'un système nouveau pour rendre le papier peint etc, entièrement "dry-on/dry-off", c'est-à-dire "poser à sec/enlever à sec."

wurden beträchtliche Fortschritte gemacht, deren Ergebnisse dazu führten, dass die gewünschten Ergebnisse auf zahlreiche Weisen erzielt werden können. Einige dieser Methoden werden vom Standpunkte der Bequemlichkeit aus aber auch mit Bezug auf die schwachen Stellen, an denen das System versagt, erwähnt.

Eine mögliche, zukünftige Methode wird vorgeschlagen, welche ein neuartiges System zur Erzielung einer vollständig "dry-on/dry-off" Wandbekleidung verwendet.

Pre-pasted wallcoverings

The use of pre-pasted wallcoverings is obviously an important step in convenience, since it relieves the user of the time-consuming and rather messy job of pasting the back of the paper. However, this process still involves the use of water to activate the adhesive and hence still tends to be inconvenient.

As the name suggests, pre-pasted wallcoverings have a thin layer of dried paste or adhesive on the back surface. This adhesive is usually based on starch or similar materials, and various grades are available which satisfy the main requirements of such a system, namely: activation by water, adequate adhesion, slip, low cost, availability, easy use, and so forth.

Three methods which can be used for production of pre-pasted materials are described briefly below.

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Powder dusting

In this process, the adhesive in powder form is sprinkled on to previously wetted wallcovering and the excess water is then removed by drying in a heated tunnel. This produces a rather grainy or bitty back to the wallcovering and one problem with this method is the dusting or falling off of loosely keyed adhesive during production.

Coating from suspension

As its name suggests, this process involves coating the wallcovering with an adhesive in a liquid medium as a suspension; this also gives a grainy appearance. Obviously, water cannot be used as the liquid medium, and so the problem of solvents, their removal, and associated environmental considerations, become apparent when considering this process.

Gum coating

This involves coating the wallcovering with the adhesive in solution form in water, then drying. The method produces a smooth backing to the substrate. However, since the solutions of adhesive tend to be very viscous at quite low solids contents, problems are encountered in depositing and drying the weights of adhesive necessary.

The advent of pre-pasted systems has highlighted, to a certain extent, the problems of removability. Since pre-pasted wallcoverings are required to be immersed in water in order to activate the adhesive, the patterns and prints must have a higher degree of resistance to water and to the tendency to smear than do conventional systems. Hence the problem arises, as with washable and scrubbable papers, of how to remove the wallcovering at the time of redecoration. The established method of wetting followed by scraping can no longer be used satisfactorily. Attention has been given, therefore, to alternative easier ways of achieving removability or strippability.

Strippable systems

A large number of methods exist to obtain semi- or completely strippable systems and most of these have been patented; some of the methods are discussed below.

Strippable top or supercoats

One of the attractive features of the increasingly popular "vinyl" or polyvinyl chloride coated wallcoverings is the fact that the vinyl coat can be fairly easily stripped from the backing paper. This is possible because the tensile strength of the vinyl is higher than the adhesive strength or the tensile and cohesive strength of the base paper.

This system is only partly strippable because the backing paper is left on the wall, but it can be argued that this can either be easily soaked and stripped or used as a lining paper for further decoration.

Similar methods have been used in conventional wallpapers, but these have limitations due to the much lower weight of top coat (or supercoat) that is used in this field.

Delaminating papers

Another method that is used involves the use of two papers laminated together (sometimes called "twin wire" papers). These can then be delaminated to remove the top layer and leave the backing paper on the wall as with "vinyls."

Obviously, the tensile and cohesive strengths of the top layer must be higher than those of the backing paper and/or the strength of the laminating adhesive, to achieve strippability.

High strength systems

The basic requirement of a totally dry-strippable wallcovering can most simply be met by using a high-strength substrate, that is, one where the strength of the substrate is greater than the adhesion to the wall. Potentially suitable substrates are:

- (a) Fabric,
- (b) Non-woven fabric,
- (c) High strength or reinforced papers,
- (d) Other high strength synthetic substrates.

Coatings

Another approach to strippability has been the use of coatings on the back of the wallcovering or coatings on the wall. This method is intended to provide, in some way, a type of release system to some part of the complex. For example, painting on to the wall coatings which consist of wax in polymer dispersions has been suggested. Similar coatings have been used on the wallcovering. Other systems using very high water-barrier coatings on the paper have also been used. These methods probably work by giving lower or controlled adhesion to either wall or wallcovering simply by reducing the level of penetration. Another type of coating finish that has recently been introduced concerns the use of a "friable" or low strength coating on the back of the wallcovering. Thus, when the wallcovering is removed, the complex is broken at its weakest point—the friable coating.

New development

The foregoing is intended to give some idea of the kind of approaches that have been and are being used in the wallcovering industry to improve convenience factors.

A more novel approach exists, which is covered in British Patents 1 264 795 and 1 315 114, and this will now be discussed. The method produces wallcoverings which are completely "dry-on/dry-off", and thus eliminate the presence of water from any stage of the decorating process.

The principle is based on the use of a permanently tacky pressure sensitive adhesive on the back of the wallcovering and a flexible, transparent release coating on the surface to obviate blocking in the roll (Fig. 1).

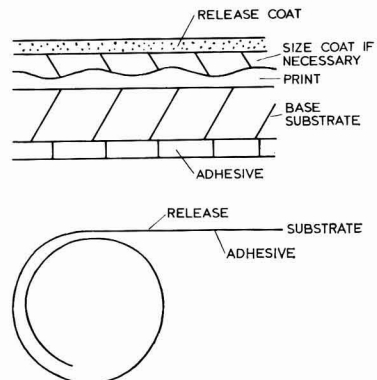


Fig. 1. Various layers on the substrate of a completely "dry-on/dry-off" wall covering

Since the wallcovering is stuck to the wall by a thermoplastic adhesive, strippability can be obtained by controlling the adhesion, cohesion and tack of the polymer.

The pressure-sensitive adhesive must provide a bond to the wall sufficient to hold the wallcovering in position for its useful life, but this bond strength must not be greater than the cohesive strength of the adhesive, the adhesive-to-substrate bond or the tear strength of the substrate. Additionally, the adhesive bond (between opposite sides) in the roll should be minimal to ensure easy unreeling.

In the emulsion polymerisation method of producing pressure-sensitive adhesives it is possible to control and regulate adhesive properties—hence these types are the preferred materials. These pressure-sensitive adhesives are usually based on acrylic ester copolymers due to their resistance to degradation and good ageing properties. A typical copolymer may consist of about 90 per cent 2-ethyl hexyl acrylate and 10 per cent methyl methacrylate.

The coating weight of adhesive used depends on several factors, such as the nature of adhesive, substrate and release system. Suitable weights for non-absorbent substrates are typically 15 to 30 g m⁻². The drying temperature of the adhesive is not critical.

Several release coat systems can be used, but those based on silicone dispersions give superior results. Since these materials are both efficient and expensive, very low coating weights, approximately 2 g m⁻², are used. Such weights are normally adequate, but on absorbent substrates it may be necessary to deposit a size or sealer coat before the release coat is applied. These types of release systems also need curing to obtain optimum release properties and to prevent migration of the silicone into the adhesive layer on storage.

Wallcoverings of this kind can be made in the following manner:

The substrate is processed as a normal wallcovering and printed. The printed surface is then coated with a dilute mix of the release system by, say, air-knife, lick roller, gravure, spray, etc, to deposit about 1-2 g m⁻² dry of release coat. The release coat is then hot air dried and cured at about

140°C for two minutes. The wallcovering is re-rolled and then coated with the adhesive, which may or may not be thickened depending on the application method. The usual techniques may be used (such as air-knife, blade, etc) and also a transfer coating technique, in which the adhesive is coated and dried on a release paper or belt and then transferred to the substrate under pressure. Although the latter process is more involved, for absorbent materials it has benefits, in that the adhesive is deposited at the surface where it is needed. Take, for example, the case of an absorbent non-woven substrate. When applying a thickened adhesive by blade, about 50 g m⁻² may be needed to give the correct properties, but in the transfer process about 20 g m⁻² is usually sufficient.

Following application, the adhesive is dried in hot air tunnels to remove the water. The wallcovering is then re-wound or pieced.

Originally in this process, it was hoped to use paper; this being a cheap, readily available substrate. However, extensive trials showed that paper when used with this system had a drawback.

Hanging trials were made at a variety of locations and it was noticed that the treated wallpaper either shrank or expanded and blistered depending on the location (Fig. 2).

The problem was traced to variations in the relative humidity causing the paper either to release moisture to the atmosphere (and hence shrink) or take up moisture (and hence expand and blister). Since the adhesive was thermoplastic, the forces in the paper caused by changes in the moisture content resulted in the paper moving. This phenomenon can be reproduced in the laboratory by subjecting some treated wallpaper to variations in humidity. Obviously this movement, whilst very slight in some cases, is undesirable and attempts have been made to stabilise paper to prevent this. So far, all attempts—some of which have been quite exotic—have failed to stabilise the system adequately and thus paper-based materials are not at present considered suitable.

During evaluation of alternatives to paper, the same expansion/contraction phenomenon has been observed,



Fig. 2. Blistering on a treated wallcovering using paper as the substrate



Fig. 3. A synthetic wallcovering system which is still dry strippable after being hung for a number of years

even with synthetic materials, when the dimensional stability of these under damp conditions (the wet expansion) is suspect. For example, some nylon based materials also show the effect. Types of materials which have been found satisfactory are those with no significant wet expansion. A typical example is a synthetic non-woven fabric from Du Pont, called "Reemay", which is a spun-bonded polyester. However, these materials tend to be expensive. They are also often porous which results in high weights of adhesive being necessary when this is applied by the usual wet techniques.

The search for even more suitable substrates is obviously continuing.

Since the system is completely "dry-on/dry-off," a different hanging technique can be used. Indeed, this is desirable for the following reasons:

Since the adhesive is dry and tacky, the slip or slide produced from the system is not as high as with conventional wet-pasted materials. Although some modification to the adhesive can be made, the high levels of slide still cannot be reproduced. Hence, if a complete wall length is cut some problems may be encountered when this is stuck to the wall and some repositioning is necessary. However, it has been found that a simple hanging method appears to overcome this problem, whilst also speeding up the hanging process.

This involves unreeling about half a metre of the wallcovering from the roll. Then, holding this end in one hand and the

roll in the other, the short length is positioned by moving horizontally and vertically until the pattern is matched and butted. If this butting proves difficult or inaccurate, the small length is easily pulled from the wall and replaced in a more suitable position.

When the pattern is matched and butted, the wallcovering is simply unrolled and pressed into position down the wall in lengths of up to one metre at a time. Using this method, even amateur decorators have produced very good results in a very short time.

When the complete wall length is in position the excess from the top and bottom can be trimmed by the usual methods, although the use of a razor blade technique has proved very easy.

Samples of this wallcovering system have been hung at various sites for a number of years now. These have maintained their position satisfactorily and are still dry strippable (Fig.3).

It has not been possible to discuss all the details of this novel system, but it is hoped that some idea of the principles involved has been given. As the convenience aspect of wallcoverings plays an increasingly important part in their acceptability, this type of "dry-on/dry-off" approach must have considerable impact on the future of wallcoverings.

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The influence of various parameters on the dispersibility of organic pigments in paint*

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Summary

Flow point methods, such as that proposed by Daniel, are not suitable for the determination of the optimum mill base composition in the case of some organic dyestuff pigments. In these instances, actual milling tests must be carried out.

In this paper, tests in a laboratory sand mill are described and the effects of variation of the components of the mill base on the colour development and the rheology are determined in the case of two organic pigments normally considered difficult to disperse.

Keywords

Raw materials: prime pigments and dyes

dioxazine pigment
quinacridone violet

Equipment primarily associated with manufacture or synthesis

sand mill

Processes and methods primarily associated with:

analysis, measurement or testing
rheology

manufacture or synthesis

pigment dispersion

Properties, characteristics and conditions primarily associated with:

materials in general

thixotropy

raw materials for coatings and allied products

tinting strength

L'influence qu'exercent de divers paramètres sur l'état de dispersion en peintures de pigments organiques

Résumé

Les méthodes pour déterminer le "flow point" telles que celle proposée par Daniel ne sont pas convenables, dans le cas des colorants organiques insolubles, pour déterminer la concentration optimale de la masse broyante. Dans ces cas on doit effectuer de véritables essais de broyage.

Dans cet article on décrit les essais effectués à l'aide d'une broyeuse à sable de laboratoire et, dans le cas des pigments organiques que l'on considère normalement comme difficile à disperser, on détermine les effets qu'exerce la variation des constituants de la masse broyante sur le développement de couleur et sur la rhéologie.

Die Einflüsse verschiedener Parameter auf die Dispergierbarkeit organischer Pigmente in Anstrichmitteln

Zusammenfassung

Für die Bestimmung der optimalen Zusammensetzung des Mahlgütes sind die z.B. von Daniels und anderen vorgeschlagenen Fließpunkt- (flow-point) Methoden bei einigen organischen Pigmenten ungeeignet. In solchen Fällen müssen tatsächlich Mahlversuche vorgenommen werden.

In dieser Abhandlung werden die in einer Laboratoriums-Sandmühle vorgenommenen Versuche und die Auswirkungen von Veränderungen in der Zusammensetzung des Mahlgütes auf die Entwicklung des Farbtons und die Rheologie mit Bezug auf zwei organische, normaler Weise hinsichtlich Dispergierbarkeit als schwierig betrachtete Pigmente beschrieben.

Introduction

Ref. 1, 2

The basic requirement for dispersing pigments in paints is the optimum formulation of the mill base, in order to obtain good wetting, fineness of dispersion and stability. This requirement is more easily met with inorganic pigments as they are, generally, more easily dispersible than organic pigments. For inorganic pigments, easy-to-follow instructions are given; reference is made in this connection to the determination of the flow point according to Daniel,¹ whereby an optimum mill base formulation can be obtained after a few preliminary tests. However, the flow point test according to Daniel cannot be applied to most organic pigments, particularly if they are difficult to disperse, because an

accurate determination is not possible due either to high thixotropy of the mix or to insufficient dispersion of the pigment in the binder by stirring with a glass rod. In the latter case, the amount of binder determined by Daniel's method gives no indication as to the binder actually required, because the pigment has not been adequately dispersed. Consequently, some dispersing process should be employed in every case. In accordance with present-day paint technology, sand- or bead-mills are chiefly used. In the author's tests, a Sussmeyer SME, mark II laboratory sand-mill with glass beads of 1mm diameter has been used. The results obtained can be readily transferred to similar equipment and, with a few limitations, to attritors.

The triple-roll mill was not included in the investigations as this machine is suitable only for dispersing pigments in

*Paper presented to the Newcastle Section on 6 December 1973.

solvent-free binders or binder systems which contain practically non-volatile solvents. These conditions exist in the case of oil pastes, letterpress printing inks and offset printing inks, which are of little relevance in paint production. The subject of dispersing pigments on the triple-roll mill has been discussed in detail in a lecture by Herbst.² He found conclusive evidence that the thermal conditions during dispersion are of primary importance for the fineness of dispersion obtained in the binder system, whereas the pressure applied by the rollers is of little consequence.

Dispersing machines of the sand-mill type require a mill base of relatively low viscosity and optimum flow properties; that is, the thixotropy should not be too pronounced. The mill base itself consists, as is well known, of the pigment, the binders which are to wet and stabilise it, and the solvents. It may also contain wetting and dispersing agents, which were not, however, used in these tests.

The main interest of the author's investigations centred, therefore, on the influence which the parameters:

- pigment concentration
- binder concentration
- temperature during dispersion
- type of binder
- type of solvent

exert on the dispersibility of an organic pigment and the viscosity of the mill base. These investigations were restricted to a small number of pigments and binders for the sake of rationalisation.

Experimental

Test conditions

Grinding equipment

Laboratory sand mill, type Sussmeyer, mark II.
Grinding medium: glass beads 1mm in diameter.

Pigments

Two organic pigments were selected which are relatively difficult to disperse, and which frequently have presented problems during processing, namely:

Dioxazine Violet (carbazole Violet), CI pigment Violet 23, and

Quinacridone Violet, CI pigment Violet 19 (β -modification).

Binders

Three resins were selected as used in the production of alkyd/melamine lacquers (eg automotive paints):

- ⊗ Alftalat AC 371, 60 per cent in xylene—short-oil alkyd resin based on saturated, synthetic fatty acids.
- ⊗ Alftalat AR 351, 60 per cent in xylene—short-oil alkyd resin based on dehydrated castor oil.
- ⊗ Maprenal RT, 55 per cent in butanol—a highly reactive butylated melamine formaldehyde resin,

Solvents

100 per cent xylene; 85 per cent xylene + 15 per cent *n*-butanol; 85 per cent xylene + 15 per cent cellosolve.

Temperature during dispersion

20°C and 50°C.

Viscosity

The viscosity of the mill bases was determined by means of a Helmes viscometer.

Degree of dispersion of the pigments

The degree of dispersion of the pigments, as a function of the dispersing time, was determined by establishing the *K/S* values (as a measure of the tinctorial strength) in the absorption maximum of both pigments. The tests were carried out on white reductions in a ratio of 1 : 50 with TiO₂, which had been applied as an opaque film on white card.

Results

Influence of the pigment concentration

The pigment concentration of mill bases to be ground in sand mills ranges from 6 to 20 per cent. The organic pigments tested have a large specific surface and under practical conditions are, therefore, ground in the lower ranges of the stated concentrations. In these test series using pigment Violet 19, β -modification, the pigment concentration was varied in the range 8 to 15 per cent. It can be seen from Fig. 1 that the tinctorial strength development of a mill base containing 8 per cent pigment does not differ greatly from one containing 13.5 per cent. The concentrations of binder and solvent were constant in both tests (35 per cent solution of Alftalat AC 371 in xylene).

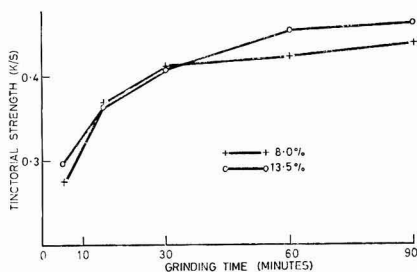


Fig. 1. Dependence of the strength development on the pigment concentration of the mill base for pigment violet 19 (β -modification)

However, the difference between the two mill bases is very marked when the viscosity curves are examined (Fig. 2). Whereas the 8 per cent mill bases exhibit virtually no yield point or thixotropy, the 13.5 per cent mill bases are in a gel state and can be neither pumped nor poured. Consequently, they could not be used for practical purposes.

Conditions are similar in the case of pigment Violet 23. Mill bases with 6 and 8 per cent pigment concentration were tested. The development of tinctorial strength is not influenced in the concentration range tested, but the viscosity curves show distinct differences: the 8 per cent mill base, for example, has a high yield point and pronounced thixotropy.

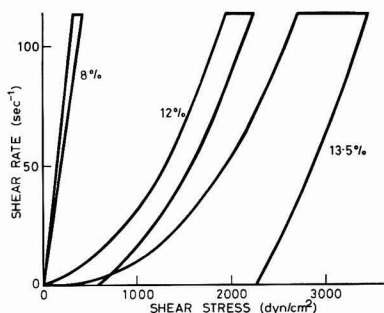


Fig. 2. Dependence of the rheological properties on the pigment concentration of the mill base for pigment violet 19 (β -modification)

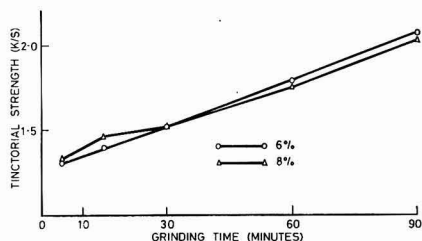


Fig. 3. Dependence of the strength development on the pigment concentration of the mill base for pigment violet 23

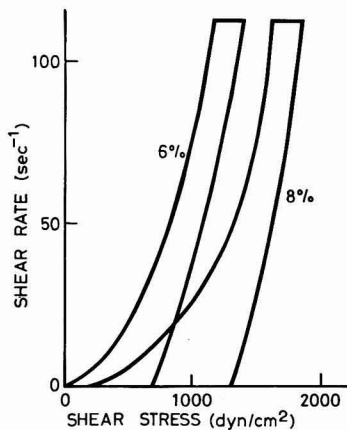


Fig. 4. Dependence of the rheological properties on the pigment concentration of the mill base for pigment violet 23

Influence of the binder concentration

It is to be expected that the viscosity of the mill base rises with increasing binder concentration at constant pigment content. The influence of binder concentration on the development of tinctorial strength was still detectable in the tests. Three mill bases were prepared containing 8 per cent pigment Violet 19, with increasing binder content (25, 35 and 45 per cent). Fig. 5 confirms observations with regard to the viscosity. Fig. 6 demonstrates that the tinctorial strength development is influenced only slightly.

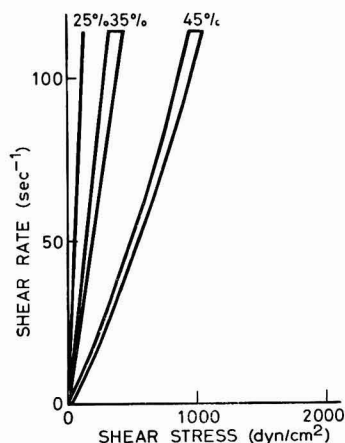


Fig. 5. Dependence of the rheological properties on the vehicle solids for pigment violet 19 (β -modification)

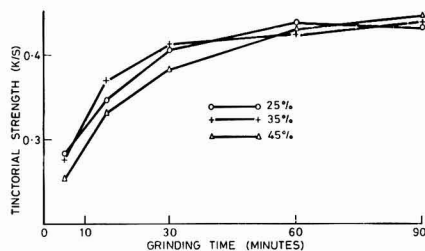


Fig. 6. Dependence of the strength development on the vehicle solids for pigment violet 19 (β -modification)

The above examples show that within the range of concentrations normally employed for organic pigments and binders in mill bases for sand mills, only a slight influence is detectable on the development of tinctorial strength of a pigment as a function of the dispersing time. However, the pigment content of a mill base does have a decisive influence on the rheological behaviour of the mill base, whilst the binder concentration affects only the viscosity. Therefore, in order to obtain an optimum mill base formulation with the desired rheological properties (lowest possible yield point and low thixotropy), it is necessary to vary the pigment content for the given binder systems in a binder of medium concentration. Subsequently, the optimum viscosity can be obtained by varying the binder concentration at a constant pigment content.

Influence of temperature during dispersion³

The temperature during the dispersion of an organic pigment influences the tinctorial strength development, the viscosity and the rheological properties of the mill base. Figs. 7-10 demonstrate the influence of the temperature during the dispersion of the two pigments investigated with Alftalat AC 371 as the binder and xylene as the solvent (binder concentration 35 per cent).

Under test conditions, pigment Violet 19 does not show any difference in tinctorial strength development at dispersing temperatures of 20°C and 50°C. The mill base dispersed at 50°C shows distinctly less favourable rheological properties.

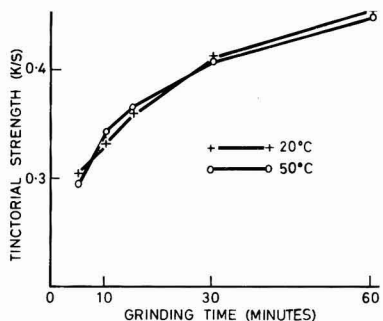


Fig. 7. Dependence of the strength development on the temperature during grinding for pigment violet 19 (β -modification)

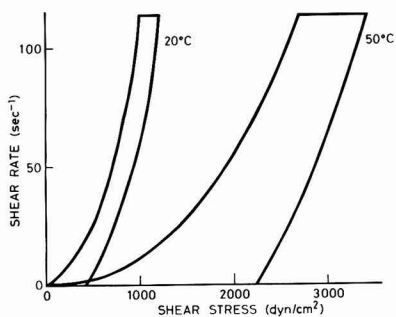


Fig. 8. Dependence of the rheological properties on the temperature during grinding for pigment violet 19 (β -modification)

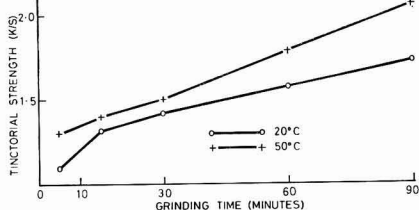


Fig. 9. Dependence of the strength development on the temperature during grinding for pigment violet 23

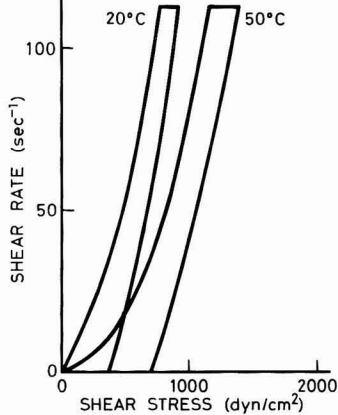


Fig. 10. Dependence of the rheological properties on the temperature during grinding for pigment violet 23

At 50°C, pigment Violet 23 has a substantially greater tinctorial strength, thus representing the average. The rheological properties of pigment Violet 23 are also less favourable at 50°C than at 20°C. Both pigments tested have good fastness to solvents and, consequently, show only a slight tendency to recrystallisation at a higher dispersing temperature. This may be different when the test conditions are changed, for instance when stronger solvents are used. This recrystallisation effect, which is connected with the solubility of the pigment in the solvent and increases with rising dispersing temperatures, may inhibit the tinctorial strength development in the case of pigments that have a poor fastness to solvents, as has been outlined in an earlier paper.³

Influence of the binder

Whilst the tests conducted so far involved one binder and one solvent (Alftalat AC 371 and xylene), varying only the concentrations of pigment and binder and the temperature, the following experiments are to demonstrate the influence of binders and solvents on the tinctorial strength development and viscosity of the mill base. The pigment concentration was kept constant in all tests (13.5 per cent for Violet 19, and 6 per cent for pigment Violet 23). The binder content of the mill base was also constant (35 per cent). Alftalat AC 371 was exchanged once for Alftalat AR 351 and also for a mixture of Alftalat AC 371 and Maprenal RT in the ratio 70 : 30. Figs. 11 and 12 show that the exchange of the binder has a distinct effect both on the strength and rheological behaviour. Pigment Violet 19 is noticeably weaker in

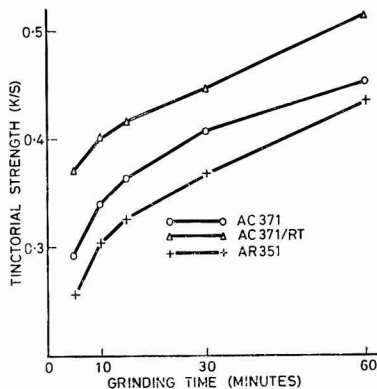


Fig. 11. Dependence of the strength development on the type of binder for pigment violet 19 (β -modification)

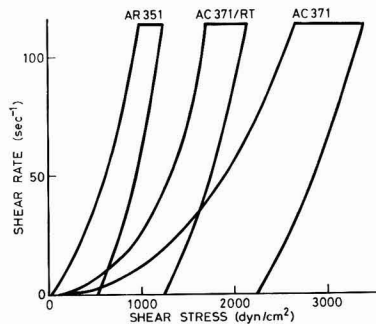


Fig. 12. Dependence of the rheological properties on the type of binder for pigment violet 19 (β -modification)

Alftalat AR 351 than in Alftalat AR 371 and substantially stronger in the mixture of Alftalat AC 371/Maprenal RT.

The rheological behaviour of the mill bases, based on Alftalat AR 351 or AC 371/Maprenal RT, is more favourable than that of the mill base based on Alftalat AC 371 (Figs. 13 and 14).

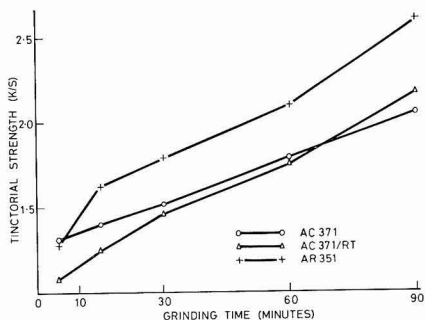


Fig. 13. Dependence of the strength development on the type of binder for pigment violet 23

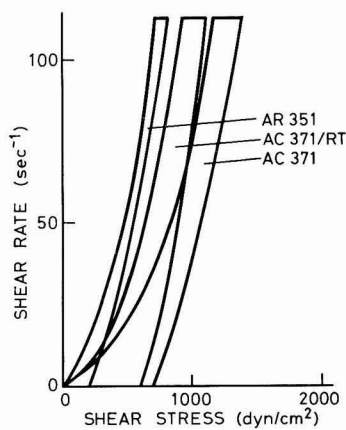


Fig. 14. Dependence of the rheological properties on the type of binder for pigment violet 23

In the case of pigment Violet 23, the situation is entirely different. This pigment is considerably easier to disperse in Alftalat AR 351 than in Alftalat AC 371, whilst the mixture of Alftalat AC 371/Maprenal RT has no effect on the tinctorial strength. Moreover, the rheological properties of the mill base based on Alftalat AR 351 are distinctly more favourable compared with the other two binders.

Influence of the solvent

In the same way as different binders in the mill base have varying effects depending on the pigment, the two pigments examined also showed changes in behaviour when part of the xylene was exchanged for cellosolve or *n*-butanol. In each case, 15 per cent of the xylene present in the formula was replaced by cellosolve or *n*-butanol. The two latter solvents considerably increased the tinctorial strength of pigment Violet 19 and substantially impaired the rheological properties of the mill base (Figs. 15-18).

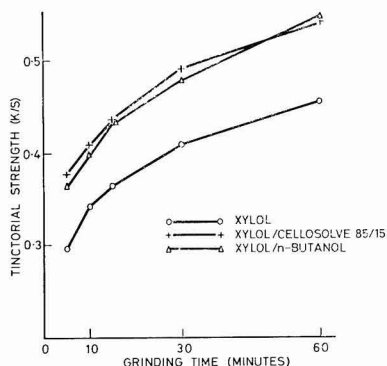


Fig. 15. Dependence of the strength development on the type of solvent for pigment violet 19 (β -modification)

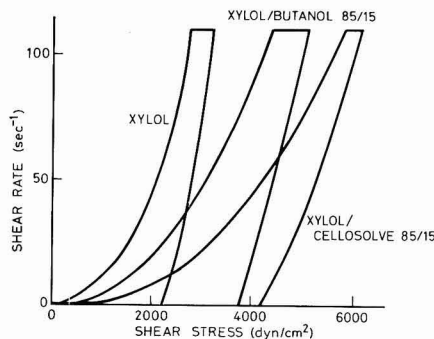


Fig. 16. Dependence of the rheological properties on the type of solvent for pigment violet 19 (β -modification)

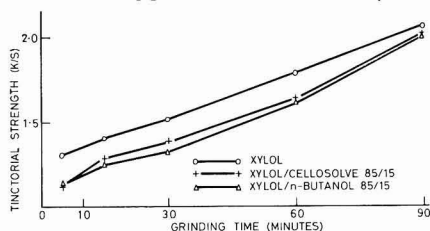


Fig. 17. Dependence of the strength development on the type of solvent for pigment violet 23

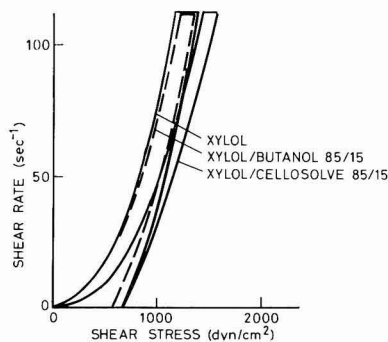


Fig. 18. Dependence of the rheological properties on the type of solvent for pigment violet 23

Unlike pigment Violet 19, pigment Violet 23 is only marginally affected. Both solvents weaken the tintorial strength slightly, and their effect on the rheological properties is negligible.

Conclusion

The experimental tests show the influence which several parameters have on tintorial strength and rheological properties of the mill base during the dispersion of organic pigments in a sand mill. It has been clearly shown by the tests—that is by varying the type of binder or composition of the solvent in the mill base—that the terms “easy or difficult to disperse” are apt to be inaccurate. This applies also to statements of a general nature, that pigments are particularly easy to disperse in one or the other specific binder. It is often maintained that pigments are difficult to disperse in acrylic resin paints. According to the author's experience, many

organic pigments are more easily dispersed in thermosetting acrylic resins than in short-oil, non-drying alkyd resins. Acrylic resins have not been included in these tests, as two different white paints would be needed for determining the tintorial strength, thus making it difficult to arrive at an accurate assessment of the results.

It is hoped that the above experimental tests will prove helpful in showing how the composition of mill bases of alkyd/melamine lacquers can be changed in order to obtain an optimum mill base formulation.

[Received 31 January 1974

References

1. Daniel, F. K., Nat. Paint Varnish Lacquer Assoc. Sci. Sec. Circ. No. 744 (1950).
2. Herbst, W., *Farbe und Lack*, 1970, 76, 1190.
3. Hafner, O., *FATIPEC IX Congress*, 1968, 150.

Next month's issue:

The Honorary Editor has accepted the following papers for publication, and they are expected to appear in the September issue of the *Journal*:

Don't waste your money on research by *G. de W. Anderson*

Internal reflection spectroscopy: application to organic coatings and plastic sheeting by *J. D. Frazee*

New developments in wallcoverings by *A. Burton*

Zeta potential—organic pigments by *W. Carr and J. A. Long (Short Communication)*

Review

Flame retardant coatings and building materials

By A. Williams

Noyes Data Corporation, Park Ridge, New Jersey and London; 1974. Pp. X + 310. Price \$36.00

This publication summarises the US Patent literature, mainly from 1960 to 1973, covering: intumescent coatings; general coatings formulations; wood impregnation and treatment; ceiling tiles, building panels and fibreboard; insulation and electrical products; and asphaltic and adhesive products. Examples and formulations from the patent are given.

In a very interesting introduction the author points out that, in the past three years, fire has caused an annual loss of around 12,000 lives and over \$2.5 billion of property damage in the United States.

In the examples, there tends to be some mixing of temperature units. For example, "The severe heat test consisted of 90 days exposure to a temperature of 80°C. . . The temperature during the arcing cycle was 145°F." However, the book is well worth having because of its comprehensive coverage.

Company, inventor and US Patent number indexes are included and the Contents section also serves as the subject index.

M. C. GIBSON

Information Received

Agent in Portugal for English China Clays' PRP Division

English China Clays Sales Co. Ltd. has announced the appointment of Produtos Sarcol Limitada as its agent in Portugal for the paint, rubber, plastics, chemical and agricultural industries.

Aminoethanols plant for ICI

A 2,500 tonnes/year plant for the production of dimethylaminoethanol and diethylaminoethanol is to be built at Billingham, Tees-side, by ICI Petrochemicals Division. The plant, based on ICI research, design and engineering, will be capable of manufacturing either product and is due on line in late 1975.

ICI already produces the basic raw materials dimethylamine, diethylamine and ethylene oxide and this plant is a logical extension of the company's extensive amines business. The plant is of a size to satisfy the United Kingdom market and also permit worldwide exports.

Bayer increases production of iron oxides

Bayer AG, Leverkusen, plans to extend gradually its production capacity for iron oxides within the colour groups red, black, yellow and brown from a present 215,000 tonnes annually to a total of approximately 300,000 tonnes by 1978.

BTP acquires E. & A. West Limited

British Titan Limited, through its subsidiary Titanium Intermediates Limited, has acquired control of E. & A. West Limited, the Derby firm of water treatment chemical manufacturers. It is the intention of British Titan Limited that West shall continue to operate under its existing name independently of the other companies forming the British Titan group of companies.

Buckman expands production facilities for modified barium metaborate

Buckman Laboratories Inc. has completed installation of additional equipment at its Memphis, Tennessee, plant that has enabled a major increase in the production of its modified barium metaborate pigment, Busan II-M1. The expanded production facilities, which are already in operation, provide more than twice the previous production capacity.

CPC Resins acquired by Croda

CPC (United Kingdom) Limited has agreed to sell its resins business, based on the products made at Kelday Works (Hackney, London), to Croda International Limited. The products sold under the "Kelrez" trade name are resins, principally, for the printing ink and allied industries. The industries served and the products supplied are more closely allied to Croda's activities than to those of CPC, and it is claimed, therefore, that both customers and employees will benefit from the change of ownership.

Institution of Chemical Engineers sets up loss prevention information exchange scheme

The Institution of Chemical Engineers has announced details of its Loss Prevention Information Exchange Scheme, to which it is inviting companies in process industry, plant manufacture and construction and others to subscribe. The project, on which the Institution has been working for a year, emphasises that loss prevention and control is preferable to post-incident remedial action. The new scheme provides for knowledge to be exchanged and shared.

Edited reports of company case histories on technical aspects of loss incidents will be published in a Loss Prevention Bulletin six times a year. A sample bulletin has been prepared and is available with all details of the scheme from the Loss Prevention Panel, The Institution of Chemical Engineers, 15 Belgrave Square, London SW1X 8PT (Telephone 01-235 3647). The scheme also includes a service of referral to likely sources of information on specific problems. Subscription to the scheme is a nominal £50 per annum.

Organotin production increased

M & T International BV, has announced that construction is under way for a major expansion of its organometallic chemical plant in the Netherlands. Expanded production is to begin early 1975.

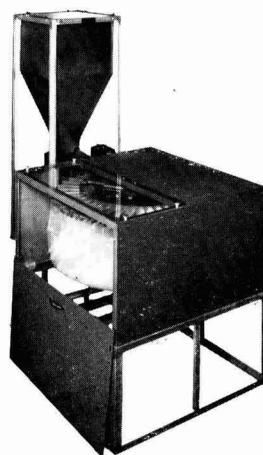
The facility is currently one of the largest organotin plants in the world and serves European, Middle and Far Eastern markets. The company said it will more than double

the size of its manufacturing facility in Vlissingen. The project, which is to cost more than 10 million guilders, will increase production capacity to more than 3,000 tons of chemicals annually.

New products

Bulk powder sampling

Following the success of the one-litre Spinning Riffler introduced in 1972, Microscal are now producing a 40-litre version, "Model SR40". Like the smaller apparatus, it uses the principles established by Dr T. Allen for a reliable mechanised method of producing representative samples from bulk powders.



The Microscal SR40 Spinning Riffler

Being considerably larger than the SR1, the SR40 carries up to 40 sample receivers and is a floor-standing apparatus. The one-litre samples from an SR40 can be further reduced in an SR1, giving a 640 : 1 reduction ratio with a single pass through each instrument.

Ciba-Geigy introduces new paint pigment

Development of an improved, easily dispersible arylamide yellow 10G pigment has enabled the Pigments Division of Ciba-Geigy (UK) Limited to introduce Irgalite Yellow PDS7, a new addition to the Irgalite PDS range of easily dispersible pigments for the paint industry. One of the major aims in developing the pigment was to significantly improve the processing properties of arylamide yellow 10G pigment. Stability to heat during processing, even at mill base temperatures above 100 C, is very good and unlike other arylamide yellow 10G pigments the product does not go redder and dirtier and lose strength at high temperatures.

One part coating based on polyurethane

Bayer AG has announced a new polyurethane raw material "Desmodur E21" which can be applied as a one part coating which hardens due to atmospheric humidity. Application can be either by brush or roller, and pigment pastes may be added to give a decorative appearance.

Solvent recovery plant

A new solvent vapour recovery plant, which uses an activated carbon filter bed and condenser unit to recycle valuable solvent without release of toxic fumes, is announced by Richard Garrett Engineering Limited, Leiston, Suffolk. Manual and automatic units are available with capacities of 0.9-46 gallons/hour in the case of trichloroethylene, and airflow handling capabilities of 700-100,000 cfm.

Literature**Aquatic toxicity index for industry**

A central index of the effect of thousands of chemicals, including metallic wastes, on aquatic life has been compiled by ICI's Brixham Laboratory. The index is available to companies and organisations generally, as well as to the other parts of the ICI group. Data from published sources and from the laboratory's own toxicity investigations over the last 15 to 20 years are stored on an IBM 3601 computer. The index is in two sections, covering pesticides (about 10,000 references) and organic and inorganic chemicals (a further 18,000 references).

The index is designed to save research time by giving rapid access to all relevant existing information. For instance, a company wanting to know the effect of cadmium on marine fish would discover from the index what papers had been published on the subject, and what toxicity levels had been observed by ICI and other research organisations.

Organic Pigments from Allied Chemical

Allied Chemical Corporation has issued technical data on six new organic pigments developed by Harmon Colors. The new pigments are mainly designed for automotive finishes and preliminary tests by the company indicate that they possess good colour fastness, although it is recommended that exposure tests in specific resin systems be made.

Courses, Symposia, etc.**Corrosion week '74**

A conference will be held from 14-19 October 1974 on corrosion, with particular reference to the protection of metals. It will be held in Budapest and organised by the Scientific Society of Mechanical Engineers (PO Box 451, Budapest) on behalf of the European Federation of Corrosion.

Surface coatings courses at Manchester Polytechnic

Several courses in surface coating technology are available at the John Dalton Faculty of Technology, Manchester Polytechnic during the 1974-75 session. The Higher National Certificate Endorsement Subject (for LRIC purposes), "Chemical Technology with Special Reference to Polymers and Surface Coatings"—The Associateship of the Society of Dyers and Colourists, (including Branch 5 relevant, the paints, lacquers and printing inks). The City and Guilds Chemical Technicians Certificate (Subject 087) Paint Option Part II, (in conjunction with local colleges) and Part III leading to the award of Full Technological Certificate.

In addition, the Department will make available evening facilities for persons wishing to apply to OCCA for the award of LTSC.

Section Proceedings**Bristol****The new flash point regulations, flash point and combustibility tests**

Mr A. N. McKelvie, who is associated with the PRA and several BSI Committees, presented the "Cardiff" lecture on the new flash point regulations, flash point combustibility tests, at a meeting on 29 March 1974, with Mr Ruddick in the chair.

The lecturer described the history of flash point methods from the middle of the 19th century leading up to the issuing of the present regulations in 1972. The proliferation of apparatus during this period and the inaccuracies of the early methods were detailed, together with the background work associated with the development and international recognition of the concept of equilibrium methods for determining flash points.

Information was also given on the difference between closed- and open-cup techniques, together with the adoption of the new open-cup method as the Combustibility Test now enacted as Schedule II of the new 1972 Regulations.

The concept of "go—no go" testing was discussed together with the development of the "Rapid Tester" which has been a breakthrough in enabling fast determinations. In this respect, the Seta flash apparatus now on the market was described.

The situation in respect of the use of flash point as a criterion of fire hazard in national and international regulations was clarified and a prediction was made of the ultimate position in this field.

The discussion period was opened by J. R. Taylor and further questions were raised by many members present, indicating the great interest in the subject.

The vote of thanks was proposed on behalf of those present by Mr R. F. Nicholls.

J.R.T.

Manchester**Are we at risk with chemicals?**

A meeting was held on 7 December 1973 at the Manchester Literary & Philosophical Society when some 38 members and guests attended to hear Dr K. R. Butterworth give a talk entitled "Are we at risk with chemicals?"

Dr Butterworth pointed out that in recent years there had been a marked increase in awareness among the general public of the problems of toxicity, and he emphasised that most substances were harmful if administered under appropriate conditions. He went on to outline the way hazards from chemicals were assessed, referring particularly to the use of "laboratory" animals and the time-consuming methods required, mentioning that some authorities thought in terms of "mega-mouse" experiments, using 1,000,000 mice.

Dr Butterworth then speculated on the trends to avoid these costly and time-consuming methods and illustrated his talk with a wide variety of examples from various industries.

A lively discussion period followed and the vote of thanks was passed with acclamation.

A.McW.

Annual Report of the Council for 1973

Adopted at the Twelfth Annual General Meeting held at University College, London, at 5.30 pm on 26 June 1974.

General

The Report for 1972 opened with the statement that it had been one of the most difficult periods with which the Association had had to contend but, in retrospect, this now appears as but a prelude to a period of even greater anxiety in 1973. When Council placed before the members at the Annual General Meeting the necessity to raise the rate of annual membership subscriptions, the point was clearly made that the Association could not hope to continue providing services for its members on the scale of previous years without at the same time asking members to provide a greater share of the revenue by which these services were provided. Council was much heartened by the overwhelming endorsement of their recommendation to raise the subscription rates as follows:

Ordinary and Associate Member	£8.00 per annum
Students under 21 years of age	£2.00 per annum
Students between 21 and 25 years of age	£4.00 per annum
Retired Member	£1.50 per annum

by the Annual General Meeting held at the Grand Hotel, Eastbourne, Sussex on 22 June 1973 but the gravity of the financial situation has remained as a constant source of concern. For a great number of years, the Association has relied on the support of advertisers and exhibitors who have appreciated that both the Association's publications and the annual forum for technical display and discussion have provided them in return with unparalleled opportunities of displaying their products on a world-wide basis. Members will, however, be only too aware of the acute shortage of raw materials experienced during 1973 which led to curtailment of advertising by suppliers to the industries and Council feels certain that the decision taken to change the format of the Journal to the international A4 size at the beginning of 1973 was an eminently wise one. Looking ahead to 1974, it became apparent in the closing months of 1973 that a further problem for the Association arising out of the raw material shortage was the reluctance of some companies to participate in the Exhibition even though it was stressed that this was an unique opportunity to demonstrate to technical personnel the optimum use to be made of present supplies. Beset, therefore, with difficulties, the Association's administration underwent an even greater strain since all the members of the staff—many of whom had long years of service with the Association—were unable to travel to the office premises in the suburbs. Thus the Director & Secretary had to attempt to recruit and train an entirely new staff and those members who have responsibility for appointing staff will be aware of the great difficulties encountered in this field in 1973. Throughout the year, the Association has had to use a great deal of temporary staff, some of whom joined the staff

on a part-time basis but at the end of the year the Director & Secretary was still endeavouring to make suitable appointments for two of the four senior posts.

The Twenty-Fifth (Silver Jubilee) Technical Exhibition took place at the Empire Hall, Olympia, London W14 on 21-24 May. A report appears later under the Exhibition Committee's Report and a review of the Exhibition appeared in the July issue of the *Journal*.

The Association's Biennial Conference took place at the Grand Hotel, Eastbourne, Sussex under the title "Towards 2000" from 19-23 June. There were more technical sessions and papers presented than at any previous Conference, together with a techno-commercial session and three Workshop Sessions. All were extremely well attended and both the papers presented and the discussions were of a very high standard. The Overseas Visitors Reception was attended by representatives from fourteen countries and the Association was pleased to welcome as a guest the retiring Executive Vice-President of the Federation of Societies for Paint Technology, Mr R. W. Matlack and Mrs Matlack, as well as the President of the Federation d'Associations de Techniciens des Industries des Peintures, Vernis, Emaux et Encres d'Imprimerie de L'Europe Continentale, Dr H. Rechmann and Mrs Rechmann. The President of Scandinaviska Lackteknikers Forbund was represented by Mr H. R. Nielsen, a Former President. During the Conference, a meeting of the Liaison Committee took place at which it was agreed to recommend to the Councils of the four societies that a working party should be set up to consider ways in which still closer ties could be effected. The Association is proud that it was able to present papers at the conferences organised by the other members of the alliance. Dr G. de W. Anderson gave a paper at the Conference of the Scandinaviska Lackteknikers Forbund in October at Sandefjord which was also attended by the President, Mr L. H. Silver. Mr Silver was also present at the Annual Convention of the Federation of Societies for Paint Technology in Chicago in November when Dr W. Carr presented the paper on behalf of the Association. A full report of the conference appeared in the August issue of the *Journal*.

The Eleventh Annual General Meeting of the Incorporated Association took place at Eastbourne on 22 June during the last full day of the Conference, when Mr L. H. Silver was elected President. The following Vice-Presidents were elected:

Mr R. G. Gardiner
Dr H. W. Keenan
Mr A. B. Lock
Mr K. R. McDonald
Mr A. T. S. Rudram
Mr T. W. Slinn
Mr R. N. Wheeler

The Honorary Officers were elected as follows:

Honorary Secretary	Mr D. S. Newton
Honorary Treasurer	Mr F. Cooper
Honorary Editor	Mr S. R. Finn
Honorary Research and Development Officer	Mr A. R. H. Tawn

The report of the Auditors on the scrutiny of the postal votes was received and it was announced that the following members had been elected to the Council for the years 1973-75:

Mr D. E. Eddowes
Dr H. R. Hamburg
Mr N. Cochrane

Votes of thanks to the Retiring President, retiring Council Members, the Honorary Officers and the Director & Secretary were carried with acclamation.

On the evening of 17 October the Council Reunion Dinner held at the Cafe Royal was extended to include any members who had previously served on the Council. On this occasion, the only guests of the Association were Past Presidents and Past Association Honorary Officers. A company of 61 assembled including 7 Past Presidents, 1 Honorary Member, 2 Past Honorary Officers and 47 past and present members of Council. The function was a most successful venture, allowing many old friendships to be renewed.

During the year, Council has strengthened its ties with two societies having a common interest in corrosion technology—the Institute of Metal Finishing and the Institution of Corrosion Technology—by the appointment of representatives on each other bodies' Technical Education Committee.

A spectacular success was scored by the London Section which held a joint Symposium with the Organic Finishes Group of the Institute of Metal Finishing at Warwick University in April. In July, the Newcastle Section held a joint conference with the Institution of Corrosion Technology and the Corrosion and Protection Association on the topic "Protective Paints" and in September the Manchester Section held a Symposium on "Wallcoverings"—an area of surface coating technology which had previously received little attention in this way. Both these symposia were successful in attracting good attendances and in their financial outcome. The Council is grateful to Sections in this difficult period of the Association's existence in offsetting wherever possible the need for grants by their own endeavours.

The Tenth New Zealand Convention took place at the Wairakei Hotel and was attended by 160 delegates and ladies.

During the year, the Director & Secretary has been pleased to help members both from home and overseas when they have visited the Association's offices. He was particularly pleased to spend some time with Mr and Mrs R. W. Matlack after the Eastbourne Conference.

In January, Council was saddened to learn of the death in the United States of Dr H. A. Gardner, an Honorary Member attached to the General Overseas Section. An appreciation appeared in the April issue of the *Journal*. An appreciation by Dr S. H. Bell (Past President) reporting the death of Dr H. W. Talen, one of the very few members attached to the General Overseas Section who have been nominated by Council for election as Vice-Presidents, appeared in the June issue of the *Journal*. The Council also learnt with sorrow of

the sudden death of Dr V. T. Crowl in October and an appreciation by Dr S. H. Bell will appear in the February 1974 issue of the *Journal*. Dr Crowl was the Hon. Publications Secretary of the London Section at the time of his death.

The Council feels that members have been conscious of the very great burden carried by the Director & Secretary, Mr R. H. Hamblin, during this year and wishes to place on record its wholehearted thanks for the effort and time which he has given so willingly.

Membership of the Association

The number of elections (244) during 1973 compared favourably with previous years and the total of membership has been retained. The figures given below at 31 December 1973 relate only to those members whose 1973 subscriptions have been received; the names of those in arrears with subscriptions have been removed:

Section	Ordinary	Associate	Honorary	Student	Total
Bristol	77	18	—	7	102
Hull	63	9	—	11	83
Irish	47	17	—	2	66
London (including Southern Branch)	613	67	4	9	693
Manchester	363	46	2	13	424
Midlands (including Trent Valley Branch)	189	21	1	4	215
Newcastle	130	12	—	4	146
Scottish (including Eastern Branch)	100	29	—	24	153
Thames Valley	116	14	—	10	140
West Riding	67	16	—	12	95
Auckland	71	35	—	2	108
Wellington	62	28	—	1	91
South African	211	50	1	13	275
General Overseas	380	27	1	—	408
Total 1973	2,489	389	9	112	2,999
Total 1972	2,438	412	9	120	2,979
Net increase/decrease during 1973	+51	-23	—	-8	+20

The Council

During the calendar year the Council has met four times, the average attendance being 28. All meetings were held in London.

Committees of the Council

The Committees of Council met as set forth below:

Exhibition Committee	2
Finance Committee	2
President's Advisory Committee	5
Professional Grade Committee	2
Publications Committee	1
Technical Committee	1
Jordan Award Committee	1
Liaison Committee	1

Exhibition Committee

Chairman: The Honorary Treasurer, Mr F. Cooper

The Twenty-Fifth (Silver Jubilee) Technical Exhibition was held at the Empire Hall, Olympia, London, from 21 to 24 May. The Exhibition was a resounding success and during the four days, admittances through the turnstiles showed a total of approximately 14,000. Visitors from more than 50 over-

seas countries visited the Exhibition and considerable interest was aroused at the Information Centre where more enquiries were received about membership and publications than at any previous Exhibition.

The Guest of Honour was Lord Limerick, Parliamentary Under-Secretary of State for Trade at the Department of Trade and Industry, who toured the Exhibition during the afternoon before attending the Exhibition Dinner in the evening at the Savoy Hotel.

In his Address of Welcome, the President of the Association, Mr A. W. Blenkinsop, laid stress on the truly international character of the Exhibition, particularly since it was the first to be held since the United Kingdom had become a full member of the European Economic Community.

In his reply, Lord Limerick congratulated the Association on its achievements and wished it well for the future.

The theme of the Technical Education Stand was "Pollution" and the Committee is once again indebted to members of the various London technical colleges who manned the stand and to Mr G. H. Hutchinson who gave lectures to the school parties.

On the occasion of the Silver Jubilee Exhibition it was decided to invite all exhibitors to an Exhibitors' Reception when some forty exhibitors were able to meet members of the Exhibition Committee, the Director & Secretary and some members of Council.

A review of the Exhibition appeared in the July issue of the *Journal* and the Exhibition Committee is particularly grateful to the Honorary Editor, Mr S. R. Finn, who collated the reports and comments from a team of reporters.

Finance Committee

Chairman: The Honorary Treasurer, Mr F. Cooper

During the year the Finance Committee has continually reviewed methods whereby the Association's revenue can be increased to meet the constantly rising expenditure without curtailing the Association's activities. Members will appreciate that it is difficult for the Committee to act quickly as a great deal of the Association's revenue is received in the first half of the year.

At the beginning of the year it was resolved to recommend to the Association's Annual General Meeting that membership subscriptions should be liable to Value Added Tax for those resident in the United Kingdom, since this allows the Association to reclaim all Value Added Tax paid by the Association.

It has been found necessary to draw in the last of the short-term loans with local authorities and conditions have not permitted the investment of any further funds during the year. In common with the fall in the value of equities during the year, the Association's investments stood at £4,319 above their purchase price at the end of 1973 compared with £20,670 at the end of 1972 and the Government holdings stood at £2,149 below their purchase price compared with £1,138 at the end of 1972.

The Committee emphasises to members that the financial position of the Association is the most difficult one with which it has had to contend since 1951.

Jordan Award Committee

Chairman: The Honorary Research and Development Officer, Mr A. R. H. Tawn

The Committee, having studied the applications received, agreed to make the Award to Mr D. F. Tunstall for his papers published in the November 1971 and August 1972 issues of the *Journal* under the joint heading "The optical behaviour of pigmented systems". The Award was presented in the form of a scroll and a cheque for £100 to Mr Tunstall at the Annual General Meeting held on 22 June at the Grand Hotel, Eastbourne.

Liaison Committee

Chairman: The President

As stated in the General section of the Report, a Working Party has been set up to consider the implementation of closer international co-operation between the four societies. Council has appointed as the Association's representatives, the President and Mr A. R. H. Tawn, with Mr D. S. Newton and the Director & Secretary as alternative representatives.

President's Advisory Committee

Chairman: The President

It will be recalled that, in the Report for 1968, reference was made to the setting up of the President's Advisory Committee comprising the Honorary Officers of the Association together with three Section Chairmen, normally in their second year of office. For the 1973-74 session, Mr L. H. Silver invited the Chairmen of the Manchester Section (Mr S. Duckworth), the Scottish Section (Mr E. M. Burns) and the Thames Valley Section (Mr W. H. Tatton) to serve on this Committee.

Professional Grade Committee

Chairman: The President

The Professional Grade Committee met during the course of the year to consider applications received for admission to the optional Professional Grade. In addition to meetings, members have examined dissertations prepared by those applying for admission to the Licentiate grade and have then conducted viva voce examinations both for these candidates and for those applying for admission as Associates.

Details of the applications received to the end of 1973 are set out below and the full list of members admitted to the various grades is published in the December issue of the *Journal*.

	<i>Applications received</i>	<i>Applications transferred between grades</i>	<i>Successful</i>	<i>Awaiting fulfilment of regulations</i>	<i>Not accepted</i>
Fellowship	184	Less 41 Add 2	139	3	3
Associateship	225	Add 41 Less 13	219	19	15
Licentiatehip	24	Add 11	8	19	8
	433*		366	41	26

*In addition there are 8 applications which have not yet been considered by the Committee

At the April meeting of Council, a temporary amendment to the regulations, expiring on 31 December 1973, was approved allowing Associate Members of at least ten years' standing who had not transferred to Ordinary Membership upon obtaining an acceptable examination qualification to apply for backdating of their Ordinary Membership to a maximum of five years. At the October Council meeting the Council requested the Professional Grade Committee to review the regulations and make recommendations, particularly concerning the obligatory length of Ordinary Membership required under the regulations before application for admission could be made, to its February 1974 meeting.

Technical Committee

Chairman: The Honorary Research and Development Officer, Mr A. R. H. Tawn

The Technical Committee has been active during the latter part of the year in preparing the format of the joint Symposium to be held with the Paintmakers' Association on 26 June 1974 and with the forward planning of the sessions for the Association's biennial Conference to be held at Scarborough in June 1975.

Technical Education Committee

Chairman: The President

As mentioned in the Annual Report for 1972, the Committee has been watching with interest the new arrangements for the City and Guilds examinations as they affect Registered Students of the Association wishing to proceed to the Licentiate of the Professional Grade. Liaison has been maintained with various technical colleges and, at two of these, Registered Students are being given guidance in the preparation of their dissertations for their Licentiatehips.

Publications Committee

Chairman: The Honorary Editor, Mr S. R. Finn

Volume 56 (1973) of the *Journal* was the first to appear in the A4 page size. Whilst there was some initial criticism, mainly on the grounds of the breaking of a tradition and the difficulty of accommodating the new size in existing bookcases, it is believed that the great majority of readers has welcomed the change. The larger page size has facilitated the printing of larger tables and diagrams and the narrower columns make reading easier; it was fortunate that the change was made for an unforeseen reason—the current paper shortage—would have made the former size paper extremely difficult, if not impossible, to obtain.

The change in size makes a direct comparison with earlier volumes impossible on the basis of the number of pages published, however, the total number of pages in 1973 was 602 compared with 1,172 in 1972, which was about the proportion anticipated from the relative page sizes. The number of pages devoted to *Transactions and Communications* was 402, which is 68 per cent of the total, showing that the proportion of space devoted to technical subjects has remained almost constant.

Eighteen book reviews were published, which was about the same as in other recent years; only two *Student Reviews*

appeared and the correspondence with the Honorary Editor fell to only seven letters. The Honorary Editor wishes to thank the Honorary Publications Secretaries for their accounts of *Section Proceedings* during the year and all those who have contributed book reviews.

The Publications Committee met on one occasion during the year, when a number of topics were discussed:

Only Part VII and a relatively small number of the second edition of Part III of the Paint Technology Manuals remain available and it has not been possible to obtain from Chapman & Hall Ltd., the publishers, any firm decision on the publication of further editions of those volumes out of stock. Parts IV and V are under active revision. Part VII, which was originally published as a series of *Student Reviews* in the *Journal* in 1972, continues to sell satisfactorily and the sales value now exceeds the costs incurred in its production.

The Committee discussed the possibility of keeping the Manuals up to date by the publication periodically of *Student Reviews* in the *Journal*, which could subsequently be bound for sale as separate monographs on suitable topics. The Powder Coating method of application has been developed largely since the appropriate part of the Manuals was published and it is hoped that it will be possible to publish a number of *Student Reviews* on this subject in the *Journal* and also to provide a separate monograph.

The continued publication of the *Resins, Drying Oils, Varnishes and Paints Report* from the Annual Reports of the Society of Chemical Industry was considered. The cost to the Association of reprints of this chapter has risen sharply recently, as well as the increased postal charges for its distribution, but the advertising revenue obtained from the reprints is now less than the booklet's production cost. The reprints cannot be obtained in the A4 page size so that it would no longer be possible to include them in a bound volume of *JOCCA*. The value of the reprint to members of OCCA is regarded as doubtful and the information will still be available in the SCI Annual Reports. The Committee, therefore, supports the proposal made by the Finance Committee that the reproduction of these reports by the Association should be discontinued.

The problems arising in reporting on the stands at the Exhibition were considered in view of the difficulty in obtaining sufficient voluntary reporters and the necessity to produce a collated report very shortly after the close of the Exhibition. It was proposed that in 1974 members of the Association should not be invited to report on the Exhibition, instead the basic report should be constructed by the Honorary Editor as early as possible and that the Honorary Publications Secretaries should each review a number of stands and report on any outstanding exhibits and comment on items of note. Any such comments would be available almost immediately for inclusion in the basic report.

The Committee learnt with deep regret of the sudden death at the end of October of Dr V. T. Crowl, who had been a valued member of this Committee and the Association for many years.

Survey of published Papers

Fifty-six technical papers were published during the year of which 22 were submitted directly and 16 were presented at the Eastbourne Conference. Eighteen papers were derived from meetings of the Sections, including 13 papers given at the Symposium on *Paint performance and the microbiological*

environment held by the Manchester Section in September 1972. Unfortunately lack of space in the *Journal* caused one paper from this meeting to be held over until the January 1974 issue. Ten papers, including three from Australia, were directly submitted from overseas sources and four Conference and four Symposium papers were given by overseas authors, making a total of eighteen. However, a greater number than this were accepted during the year by the Honorary Editor but had to be held over due to the publication of the Conference and Symposium papers.

Section	1971	1972	1973
Bristol	—	—	—
Hull	—	—	1
Irish	1	1	—
London	6	4	4
Manchester	1	—	13
Midlands	—	2	—
Newcastle	—	—	—
New Zealand	—	—	—
Scottish	6	—	—
South African	—	5	—
Thames Valley	—	1	—
West Riding	2	—	—
<i>Direct</i>			
United Kingdom	7	10	12
Overseas	12	18	10
Conference	13	—	16
Foundation Lecture	1	—	—
	49	41	56

The smaller total number of papers published in 1972 was due to the publication of 12 *Student Reviews* constituting Part VII of the Paint Technology Manuals.

Representation on other organisations

The Association was represented on other organisations as follows:

Technical Training Board for the Printing Ink and Roller Making Industry: Mr A. R. H. Tawn and Mr H. C. Wordsall.

Paint Apprenticeship Council: Dr H. W. Keenan and Mr G. Copping.

The Parliamentary and Scientific Committee: The President and the Director & Secretary.

The British National Committee for Chemistry: Mr A. R. H. Tawn.

City and Guilds Advisory Committee for the Chemical Technicians Certificate: Dr J. G. Gillan.

East Ham Technical College Consultative Committee for the Science Department: Mr R. M. W. Wilson.

Association of Exhibition Organisers: The Director & Secretary.

Programme Liaison Committee: The Honorary Programmes Officer of the London Section and the Director & Secretary.

The Paintmakers Association Training and Technical Education Committee: The Honorary Secretary and the Director & Secretary.

The Society of Dyers and Colourists Terms and Definitions Committee: Dr J. Toole and Mr A. E. Honiball.

The Society of Dyers and Colourists "Review of Coloration Progress" Committee: Mr H. D. Brearley.

The Colour Group (Great Britain): Mr R. Smith.

Institution of Corrosion Technology Education Committee: Dr J. B. Harrison and Mr D. S. Newton.

Institute of Metal Finishing Technical Education Committee: Mr A. R. H. Tawn.

British Standards Institution:

PVC Pigments, Paints and Varnishes Industry Committee: Dr J. B. Harrison

PVC/1 Pigments: Mr A. S. Lewis

PVC/9 Black Pigments: Mr J. S. Marsh

PVC/1/11 Extenders: Mr S. A. Ray

PVC/1/18 Zinc Dust Pigments: Mr D. S. Newton

PVC/3 Oils, Varnishes, Putty etc.: Mr G. H. Hutchinson

PVC/3/5 Test Methods for Paint Media: Dr L. A. O'Neill

PVC/4 and PVC/4/1 Lac: Dr B. S. Gidvani

PVC/6 Cement Paints: Mr W. O. Nutt

PVC/8 Plastic Wood: Mr V. P. Gellay

PVC/10 Test Methods for Paints: Mr A. N. McKelvie

PVC/11 Revision of the Glossary of Paint Terms: Mr S. A. Ray

PVC/14 Colours for Paints: Mr A. B. Lock

PVC/15 Water Paints and Distempers: Mr T. W. Wilkinson

PVC/16 Ready Mixed Paints: Mr G. A. Newell

PVC/19 Bituminous Paints: Mr J. Rogers

PVC/20 Calcium Plumbate Priming Paints: Mr A. G. Walker

PVC/23 Zinc Rich Paints: Dr D. Atherton

PVC/24 Water Thinned Priming Paints: Mr J. H. Sparrow

PVC/25 Organic Finishes for Aluminium Windows: Dr J. B. Ley

LGE/9 Artificial Daylight for Colour Matching: Miss O. Rawland

C/17 Viscosity: Mr A. N. McKelvie

C/17/2 Revision of BS. 188 (Drafting): Mr A. N. McKelvie

CHE/43 Test Sieves: Mr M. J. F. Meason

CHE/50 Test Methods for Powder Properties: Mr D. S. Newton

CIC/4 Solvents and Allied Products: Dr L. A. O'Neill until August

CIC/6 Glycerol: Mr W. A. Ledger

OFFA/7 Sampling Oilseeds, Oils and Fats: Mr N. F. Lythgoe

OFFA/12 Vegetable Oils: Mr N. F. Lythgoe

OFFA/24 Analysis of Oilseeds, Oils and Fats: Mr N. F. Lythgoe

ELE/16/53/6 Varnishes: Mr J. McGowan until July

ACE/44 Aircraft Finishes: Mr J. B. G. Lewin

BLCP/18 Code of Practice: Painting: Mr P. J. Gay until July

M/26 Artists' Materials: Mr J. A. L. Hawkey

RDE/25 Road Marking Compounds: Mr T. R. Bullett

OC/20/4/12 Chemistry and Chemical Technology: Mr J. Orpwood

Reports from the above representatives may be seen by members at the Association's offices.

The Association was also represented on overseas organisations as follows:

South African Bureau of Standard's Specifications:

SABS 515 Decorative Paints, non-aqueous solvent base, interior use: Mr H. I. Bossman, Mr N. A. Brown, Mr K. M. Engelbert and Mr A. H. Meyling

SABS 630 Decorative High Gloss Enamel—non-aqueous solvent base, exterior and interior use: Mr H. I. Bossman, Mr N. A. Brown, Mr K. M. Engelbert and Mr A. H. Meyling

SABS 631 Decorative Oil Gloss Paint—non-aqueous solvent base, exterior and interior use: Mr H. I. Bossman, Mr N. A. Brown, Mr K. M. Engelbert and Mr A. H. Meyling

SABS 663 Primer and Enamel Paint for Hospital Furniture: Mr A. H. Meyling

SABS 681 Undercoats for Paints: Mr K. R. Hart

SABS 683 Roof Paints: Mr K. M. Engelbert

SABS 801 Epoxy Tar Paints: Mr P. A. Draper

SABS 912 Calcium Plumbate Primer: Mr M. P. Greef

Science and Education Advisory Committee, Natal College of Advanced Technical Education: *Mr K. R. McDonald and Mr K. M. Engelbert.*

Council of the National Association of Scientific and Technical Societies: *Mr L. F. Saunders.*

Standards Association of New Zealand—Paints and Coatings Sectional Committee: *Mr T. W. Slinn.*

Appendix

Report of the Council in accordance with the Companies Act 1967

1. The Council presents herewith the audited accounts of the Association for the year ended 31 December 1973.

2. Results

The results for the year and the appropriation thereof are set out in the Income and Expenditure Account on page 9.

3. Principal Activities of the Association

The Association has continued in its work of furthering the development of the science and technology of the oil and colour industries.

4. Changes in fixed assets

The movement in fixed assets during the year is set out in the table on page 10.

5. The Council

The following were members of Council at 31 December 1973:

L. H. Silver
 A. W. Blenkinsop, FTSC
 D. S. Newton, AMCT, CGIA, FInstCorrT, FIMF, FTSC
 F. Cooper, BSc
 S. R. Finn, BSc, FRIC, FTSC
 A. R. H. Tawn, FRIC, FInstPet, FIMF, FTSC
 R. G. Gardiner
 A. B. Lock
 K. R. McDonald, BSc, ATSC
 A. T. S. Rudram, FTSC
 T. W. Slinn, BSc, FTSC *elected 22 June 1973*
 R. N. Wheeler, BA, ARIC
 H. W. Keenan, PhD, FRIC, FTSC
 D. E. Eddowes, BSc
 L. J. Brooke, ATSC
 H. G. Clayton
 N. Cochrane *elected 22 June 1973*
 H. R. Hamburg, PhD
 H. C. Worsdall
 F. E. Ruddick
 P. L. Gollop, ARIC, FTSC
 F. D. Robinson, BSc, ATSC
 E. Armstrong *elected 17 April 1973*

F. W. Stoye, BSc, FIOP, PhD, FRIC, FTSC *elected 20 April 1973*
 Miss P. Magee

R. H. E. Munn, LRIC, FTSC *elected 10 April 1973*

J. T. Tooke-Kirby *elected 15 November 1973*

S. Duckworth, ARIC, FTSC

J. E. Mitchell, BSc, FRIC, FTSC *elected 13 April 1973*

A. S. Gay, ATSC

D. E. Hopper

C. N. Finlay *elected 6 April 1973*

K. F. Baxter

E. M. Burns

A. McLean, BSc, ARCST, FRIC, FTSC

W. H. Tatton, ARIC, FIMF, FTSC

J. L. Inshaw, ARIC, ACTC, FTSC *elected 12 April 1973*

D. Morris, ATSC

R. P. Bartrum *elected 10 April 1973*

P. F. Sharp, BSc, ATSC *elected 20 March 1973*

F. Sowerbutts, BSc (Tech), FTSC

R. A. Eglington, BSc *elected 18 April 1973*

F. Schollick, BSc, FRIC

M. D. Taylor, FTSC *elected 22 February 1973*

G. Willison, FRIC

M. J. Leahy (co-opted as President of the Oil and Colour Chemists Association Australia).

A. G. Holt, FTSC (co-opted as Representative of the Oil and Colour Chemists' Association Australia).

T. Entwistle (served in place of F. Schollick while he was on six months' leave in South Africa).

In addition, the following were members of Council at 1 January 1973 and served during the year; the date shown after each name denotes when during 1973 service on Council terminated:

N. H. Seymour, FTSC (22 June)

T. Whitfield, FTSC (22 June)

V. T. Crowl, BSc, PhD, DIC, ARCS, FRIC, FTSC (22 June)

D. J. Morris (22 June)

O. E. Rutledge (22 June)

J. E. Gilroy (17 April)

F. D. H. Sharp (20 April)

F. M. Smith, BSc, PhD, ARIC, FSDC, FTSC, MIOP (13 April)

A. A. Duell, ARIC, FTSC (6 April)

B. Jacob, BSc, FTSC (12 April)

Mrs K. Driver (10 April)

M. D. Thompson (22 February)

D. A. Kalwig (co-opted as President OCCAA) (August)

6. Auditors

The auditors, Coopers & Lybrand, will continue in office in accordance with Section 159(2) of the Companies Act, 1948.

By Order of the Council

ROBERT HAMBLIN

Director & Secretary

2 January 1974

The Manchem Mix. We think you'll recognise the formula.

Manchem is simply another name for some very well-proved experience.

Because Manchem Limited are now responsible for making and selling products and providing the services previously available from Hardman & Holden Ltd.

And this means experience which is widely recognised in the paint and printing ink industries.

With intensive research to test existing formulations or help you develop new ones. And, of course, a range of products as comprehensive as any in the industry.

When you use these resources from Manchem, you'll find we're quickly making a name for ourselves.

MANOSEC, MANCHEM and COZIRC – Driers for paints and inks

**MANALOX and ZIRCOMPLEX – Compounds for modification
of rheology and water repellency**

MEKOXIM and ALDOXIM – Anti-skinning agents

MANOXOL – Sulphosuccinate surfactants

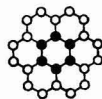
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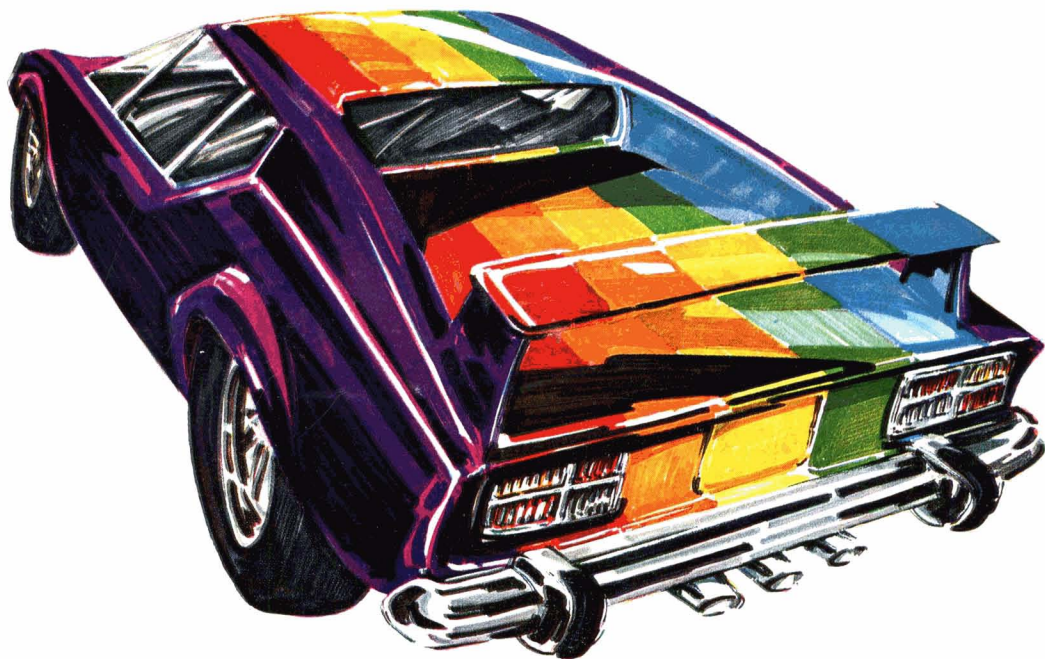


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OIL AND COLOUR CHEMISTS' ASSOCIATION

INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 DECEMBER 1973

£	1972 £	£	INCOME	£	1973 £	£
			MEMBERSHIP AND GENERAL INCOME—			
	14,838		Subscriptions		14,914	
	720		Professional Grade Certification Fees		142	
	127		Entrance Fees		127	
	590		Sundry Publications		2,111	
	—		Sundry Income		13	
	25		Profit on sale of equipment		—	
	—		Section Surplus (Note 5)		942	
	—		Conference		827	
	2,981		Investment Income		3,636	
	19,281				22,712	
			JOURNAL RECEIPTS—			
	9,179		Advertising		11,819	
	13,005		Sales		14,927	
	2,208		Capitation Fees (OCCAA)		2,598	
	1,174		Reprints		661	
	25,566				30,005	
	40,717		EXHIBITION RECEIPTS		62,225	
85,564						114,942
			EXPENDITURE			
			MEMBERSHIP AND GENERAL EXPENSES—			
	9,057		Administrative Expenses (Note 4)		10,595	
	9,768		Journal		12,487	
	4,834		Postage, Printing and Stationery		6,676	
	1,427		Publications		1,482	
	2,041		Section Expenditure (Note 5)		—	
	—		Council Reunion Dinner		89	
	558		Dinner Dance and Foundation Lecture		—	
	100		Provision for Paint Technology Manuals		—	
	74		Branch Chairmen's Badges		2	
	2,185		General Expenses, including Accountancy		2,892	
	30,044				34,223	
			JOURNAL EXPENSES—			
	9,057		Administrative Expenses (Note 4)		10,595	
	11,938		Printing and Publication		15,263	
	860		Reprints		882	
	2,417		Postage and Stationery		2,827	
	996		General Expenses		1,099	
	25,268				30,666	
			EXHIBITION EXPENSES—			
	36,976		Direct Expenses		48,896	
	9,057		Administrative Expenses (Note 4)		10,596	
	996		General Expenses		1,099	
	47,029				60,591	
102,341						125,480
<u>£(16,777)</u>			(Deficit) for the year			<u>£(10,538)</u>

NOTES ON THE ACCOUNTS

1. Fixed Assets	Furniture, Fittings, Office Machines and Motor Car		Leasehold Property	
	£	£	£	£
Cost				
At 1 January 1973	8,922		8,128	
Additions	201		—	
		9,123		8,128
Depreciation				
At 1 January 1973	6,817		—	
Charged to Income and Expenditure Account	998		452	
		7,815		452
Net book value at 31 December 1973		1,308		7,676

2. Foreign Currencies

Overseas Section income, expenditure, assets and liabilities have been converted to Sterling at the following rates:

New Zealand	\$1.61
South Africa	Rands 1.55

3. The Ethel Behrens Fund and the Jordan Award Fund have not been incorporated in the Association Income and Expenditure Account and Balance Sheet but have been shown as separate accounts.

4. Administrative Expenses

Administrative expenses have been equally apportioned between the three main headings of expenditure in the Income and Expenditure Account on the basis of staff time involved. These expenses are:

1972		1973
£		£
20,250	Salaries	19,455
593	Temporary staff	4,671
596	Welfare	407
4,331	Rent, rates, lighting and telephone	5,328
375	Audit fee	375
—	Provision for dilapidations	100
—	Provision for depreciation:	
1,026	Furniture, fittings etc.	998
—	Leasehold property	452
<u>£27,171</u>		<u>£31,786</u>
	The charge to each heading is therefore:	
9,057	Membership	10,595
9,057	Journal	10,595
9,057	Exhibition	10,596
<u>£27,171</u>		<u>£31,786</u>

5. Section Surplus

The surplus of Section income over expenditure is as follows:

1972		1973
£		£
108	Bristol	12
60	Hull	111
208	Irish	353
313	London	(1,515)
	(Southern Branch £5)	
(118)	Manchester	(671)
182	Midlands	278
	(Trent Valley Branch £29)	
123	Newcastle	3
255	Scottish	(393)
	(Eastern Branch £76)	
173	Thames Valley	184
32	West Riding	163
64	Auckland	361
129	Wellington	202
512	South Africa (estimated)	225
2,041		(687)
—	Adjustment for previous year	(255)
<u>£2,041</u>		<u>£(942)</u>

ETHEL BEHRENS FUND

INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 DECEMBER 1973

1972		1973	1972		1973
£	Expenditure	£	£	Income	£
52	Income Tax on Investment Interest	46	135	Interest on Investment (Gross)	135
—	Surplus	89	171	Deficit	—
254	FSPT Travelling Expenses	—			
<u>306</u>		<u>135</u>	<u>306</u>		<u>135</u>

BALANCE SHEET as at 31 December 1973

1972		1973	1972		1973
£	Liabilities	£	£	Assets	£
2,606	Accumulated Fund at 1 January	2,435	2,442	Local Government Securities at cost (Market Value £2,128)	2,442
—	Add Surplus	89	(7)	Balance at Bank	82
171	Less Deficit	—	<u>2,435</u>		<u>2,524</u>
<u>2,435</u>		<u>2,524</u>			

JORDAN AWARD FUND

INCOME & EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 DECEMBER 1973

1972		1973		1972		1973	
£	Expenditure	£		£	Income	£	
—	Award	100		65	Interest on Investment (Gross)	66	
—	Printing	4		—	Deficit	38	
65	Surplus	—					
<u>65</u>		<u>104</u>		<u>65</u>		<u>104</u>	

BALANCE SHEET as at 31 December 1973

1972		1973		1972		1973	
£	Liabilities	£		£	Assets	£	
1,095	Accumulated Fund at 1 January	1,160		1,000	British Government Securities at cost (Market Value £896)	1,000	
—	Less Deficit	38		160	Balance at Bank	122	
65	Add Surplus	—		<u>1,160</u>		<u>1,122</u>	
<u>1,160</u>		<u>1,122</u>					

Proceedings of the Annual General Meeting

The Twelfth Annual General Meeting of the Incorporated Association was held on 26 June 1974 at 5.30 pm at University College, Gower Street, London WC1E 6BT, with the President (Mr L. H. Silver) in the Chair.

There were 28 Members present.

The notice convening the meeting was read.

Apologies

Apologies for absence were received from Mr H. G. Clayton, Mr A. R. Hickson, Mr P. F. Holt, Dr L. Valentine, Mr D. J. Silsby, Mr S. Duckworth, Mr A. G. Holt, Mr C. N. Finlay, Mr E. M. Burns, Mr D. E. Eddowes, Mr W. H. Tatton and Dr H. R. Hamburg.

Minutes

The President asked the meeting to take as read the Minutes of the Eleventh Annual General Meeting held on 22 June 1973, as printed and circulated in *JOCCA*, pp 409-411 inclusive, August 1973. There being no comments, the adoption of the Minutes was put to the meeting and carried unanimously.

Report of the Auditors to the Members

The Report of the Auditors to the Members was read.

Annual Report of the Council for 1973

Mr D. S. Newton (Honorary Secretary) moved and Mr F. Cooper (Honorary Treasurer) seconded the adoption of the Annual Report of the Council and the Statement of Accounts for 1973.

Mr F. D. H. Sharp asked a question on Section finances which was answered by the Honorary Treasurer.

There being no further comments or questions on the Annual Report of the Council and Statement of Accounts, these were formally adopted by the meeting.

Appointment of President Designate

Mr Silver stated that, as indicated on the Agenda, Mr A. T. S. Rudram had been appointed by Council as President Designate of the Association and he now asked the Annual General Meeting to show their approval.

This was carried unanimously with acclamation.



Mr A. T. S. Rudram, who was elected President Designate at the AGM

Mr Rudram thanked the meeting for the high honour bestowed upon him and stated that he would do his utmost to forward the interests of the Association.

Election of Vice-Presidents of the Association

The President read the nominations of the Council as printed on the Agenda and asked the meeting to accept them en bloc. This was agreed. The following were then elected as Vice-Presidents:

- | | |
|------------------------|-------------------------|
| (i) Mr W. F. McDonnell | (v) Mr F. D. H. Sharp |
| (ii) Mr A. S. Gay | (vi) Mr T. W. Slinn |
| (iii) Mr A. G. Holt | (vii) Mr L. F. Saunders |
| (iv) Mr F. D. Robinson | |

Election of Honorary Officers of the Association

It was unanimously agreed to elect the Honorary Officers as follows:

Honorary Secretary	Mr D. J. Morris
Honorary Treasurer	Mr F. Cooper
Honorary Editor	Mr S. R. Finn
Honorary Research and Development Officer	Mr A. R. H. Tawn

The President paid tribute to the work of the retiring Honorary Secretary (Mr D. S. Newton) and the meeting recorded its thanks by acclamation.

Honorary Membership

The President stated that the Council had decided to award Honorary Membership of the Association to Mr R. W. Matlack upon his retirement as Executive Vice-President of the Federation of Societies for Paint Technology. The scroll had been presented to Mr M. Malaga, the President of the Federation of Societies for Paint Technology, at the Dinner Dance on 31 May and it was understood that he would present it to Mr Matlack at the next Federation Convention. The scroll read as follows:

OIL AND COLOUR CHEMISTS' ASSOCIATION

It was unanimously agreed this day by the Council of the Association to confer

*Honorary Membership
upon*

Robert W. Matlack, Esq.,

formerly Executive Vice-President of the Federation of Societies for Paint Technology, in recognition of the outstanding service which he rendered for many years in promoting co-operation between this Association, the Federation and with kindred organisations internationally.

Leslie Silver
President

D. S. Newton
Hon. Secretary

Robert Hamblin
Director & Secretary
26th February 1974

Announcement of election of three Elective Members to Council 1974-76

The President read the following report which had been received from the Auditors:

We have scrutinised and counted the voting papers received from the members of the Association in the United Kingdom and Overseas, and certify that the votes cast, including those notified by telex from the South African section, show that the following obtained the largest number of votes:

J. R. Taylor N. H. Seymour A. A. Duell

Nine voting papers were rejected as not being in order.

London
20 June 1974

COOPERS & LYBRAND
Chartered Accountants

The President then declared the three members listed elected to Council.

Chairmen of Sections for the coming session

The names of the Section Chairmen for the coming year were given as follows:

Bristol	Mr F. E. Ruddick
Hull	Mr E. Armstrong
Irish	Mr D. P. Power

London	Mr R. H. E. Munn
Manchester	Mr. H. G. Clayton
Midlands	Mr. D. E. Hopper
Newcastle	Mr. C. N. Finlay
Scottish	Mr A. McLean
Thames Valley	Mr J. L. Inshaw
West Riding	Mr D. Morris
Auckland	Mr P. F. Sharp
South Africa	Mr. D. J. Pienaar
Wellington	Mr M. D. Taylor

Reappointment of Auditors and fixing the remuneration thereof

It was proposed by Mr D. E. Hopper that Coopers & Lybrand (Chartered Accountants) be reappointed Auditors of the Association and that their fee be £450. This was seconded by Mr J. L. Inshaw and carried unanimously.

Vote of thanks to retiring Council Members

The President called upon Mr J. Griffiths to propose a vote of thanks to the members retiring from Council.

Mr Griffiths thanked all those members, both at home and overseas, who were retiring from Council after service in various capacities as Vice-Presidents, Elective Members, Section Chairmen and Section Representatives. He specifically mentioned the two retiring Honorary Officers, Mr A. W. Blenkinsop (Immediate Past President) and Mr D. S. Newton (Honorary Secretary), pointing out that they had both served in other capacities on Council. Furthermore, most of those retiring from Council had served as Section Chairmen and in other ways had contributed to the work of the Association, at Council and Section level. This vote of thanks was carried with acclamation.

Vote of thanks to Honorary Officers of the Association

In proposing a vote of thanks to the Honorary Officers, Mr F. E. Ruddick drew attention to the work of the Honorary Officers in their various spheres. Mention had already been made of Mr Newton's contribution as Honorary Secretary, and members would be aware of the work of Mr F. Cooper (Honorary Treasurer) at this critical stage of the Association's finances. In Mr S. R. Finn (Honorary Editor) the Association had a hard working and outstanding Honorary Editor, and all would be aware of the contribution made by Mr A. R. H. Tawn (Honorary Research and Development Officer).

Mr Ruddick then asked the meeting to show its gratitude to the Honorary Officers and this was carried with acclamation.

Vote of thanks to Chairman of meeting

In proposing the vote of thanks to the Chairman of the meeting, Mr F. D. Robinson thanked the President for his work during his first year of office and wished him a successful second year. He mentioned the President's forthcoming visit to New Zealand, Australia and South Africa and extended the best wishes of the Association.

This vote of thanks was carried unanimously.

Vote of thanks to the Director & Secretary

Mr D. S. Newton moved a vote of thanks to the Director & Secretary (Mr R. H. Hamblin) and his staff and this was carried unanimously.

Any other competent business

There being no other competent business, the President declared the meeting closed at 5.48 pm.



OCCA—XXVII Exhibition

Olympia, London. 22-25 April 1975

One exhibitor's view of OCCA-26

Special visits for overseas delegations already being arranged for the 1975 International Forum for technical display and discussion in the surface coatings industries

Following the great success of the delegation from Osaka, Japan, on the occasion of OCCA-26 when special arrangements were made for works visits etc., requests have already been received for similar facilities for a delegation from Czechoslovakia and for a further Japanese party.

Any company wishing to be placed on the list of those willing to accept such delegations should write to the Director & Secretary as soon as possible setting out the countries in which they are interested and the scope of the activities which would be displayed.

An exhibitor's view of OCCA-26 (April 1974)

At the twenty-sixth Exhibition, in April 1974, there were direct overseas exhibitors from 13 countries, besides many overseas companies which showed through British associates. A full review of this Exhibition, showing the countries from which visitors came and the products on display, appeared in the June issue of this journal.

We are indebted to the Editor of "Compass" for permission to quote the following:

Scott Bader was one of 120 companies from the UK and 13 overseas countries represented in the Empire Hall. Despite being staged in a period of world raw-material shortage—or perhaps because of it—the exhibition proceeded, from the start, in an atmosphere of quiet, no-nonsense, business-like efficiency. Representatives on the Scott Bader stand recorded no less than 345 genuine technical visits—one every six minutes throughout the four days of the show.

Motif of Exhibition 1975

The motif for 1975, designed by Robert Hamblin, continues the theme of OCCA-26, in which attention was drawn to the European Economic Community, by extending it to show the world-wide interest aroused by the Association's annual Exhibitions in London, which in recent years have attracted visitors from more than 50 overseas countries.

Venue

As in 1974, the Exhibition will be of four days' duration and will open on the Tuesday morning at 09.30 and will close on the Friday at 16.00. The Exhibition of raw materials, plant and equipment used in the paint, printing ink, colour, and allied industries will take place at the Empire Hall, Olympia, London.

Invitation to exhibit

Copies of the Invitation to Exhibit are being despatched to those companies and organisations, in the United Kingdom and overseas, which have shown at past Exhibitions or have already requested information on the 1975 Exhibition. Completed application forms for stand

space must be returned to the Director & Secretary of the Association not later than 1 October 1974.

Any organisation which has not previously received an Invitation to Exhibit and wishes to do so should contact the Association's offices as soon as possible.

Jordan Award

This award was instituted by the late Mrs M. R. Jordan in memory of her husband Dr L. A. Jordan, who was President of the Association 1947-49 and an Honorary Member, and who died in December 1964. The Committee invites applications for the third award of £100.

The rules of the Award are:

1. The Award will be made for the best contribution to the science or technology of surface coating by a Member of any nationality working in either the academic or industrial field who is under the age of 35 at the date of application.

2. The final date for submission of applications will on this occasion be 27 December 1974 and it is hoped to present the award at the Scarborough Conference in the following June.

3. The selection of the recipient of the Award will be made by a Committee under the chairmanship of the Association's Hon. Research & Development Officer.

4. There will be two methods of application. First, by the submission of a paper describing original work by the candidate which is offered for publication in the *Journal* or has been so published during application. The alternative method will be by recommendation by a superior for work which for reasons of commercial secrecy cannot be published; in this case the candidate will be expected to submit a dissertation on a topic relating to his work and demonstrating his superior knowledge of the principles thereof. The Award is for individual merit and clear evidence of the candidate's own contribution will be required if a paper is offered under joint authorship.

5. Applications should be addressed to the Director & Secretary at the Association's offices.

Joint Symposium

THE OPTIMUM USE OF RESOURCES FOR THE SURFACE COATINGS INDUSTRIES

The one-day joint symposium organised by the Oil and Colour Chemists' Association and the Paintmakers Association will now take place on Tuesday 17 September 1974 at University College, Gower Street, London WC1E 6BT.

The morning session will be chaired by the President of OCCA, Mr L. H. Silver, and the afternoon session by the President of the Paintmakers' Association, Mr S. Coppins.

The papers to be presented are as follows:

"Petrochemicals," Mr A. L. Waddams (BP Chemicals International Ltd.).

"The role of water-borne polymers," Mr J. M. Cruden (Harlow Chemical Co. Ltd.).

"Optimum use of organic pigments," Dr F. M. Smith (Ciba-Geigy Ltd.).

"Utilisation of financial resources," Mr A. G. North (Cray Valley Products Ltd.).

"The role of the consultant," Mr H. R. Touchin (Touchin Technical Laboratories, Bury).

"Utilisation of management resources," Mr P. T. Terry (Chemical and Allied Products Industry Training Board).

The morning session will take place from 10.00 am to 12.30 pm, after which there will be a short reception and luncheon.

The afternoon session will take place from 2.00 pm to 5.00 pm. The charge for the symposium will be £22.00 (inclusive of VAT), which will include badges, folders, synopses of papers if available, and luncheon. Forms of application can now be obtained from the Director & Secretary at the Association's offices.

OCCA Biennial Conference 1975

Scarborough

THE PERFORMANCE OF SURFACE COATINGS—
DOES THE REALITY MATCH THE THEORY?

As already announced in the *Journal*, the next biennial Conference of the Association will take place at Scarborough from 17 to 21 June 1975. The headquarters will be the Grand Hotel, with overflow accommodated at the St. Nicholas Hotel. These two hotels are situated opposite each other on St. Nicholas Cliff.

The title of the Conference will be "The performance of surface coatings—does the reality match the theory?" and it is intended that as on previous occasions, full preprints will be published for despatch to delegates in advance of the Conference. It is important, therefore, that any person, whether or not a member of the Association, who feels that a report of his work could form the basis of a suitable technical paper, should contact immediately the Honorary Research & Development Officer of the

Association (Mr A. R. H. Tawn, 34 Crest View Drive, Petts Wood, Kent BR5 1BY, England).

It will be recalled that it is the custom at the Association's Conference for the authors merely to outline their papers, highlighting points of interest, and for a general discussion of the paper to follow. The author will not be expected to deliver the paper *in toto*, since the object of sending out the preprints in advance is that delegates may read these thoroughly before the Conference.

Forms for registration will be despatched to all members of the Association attached to the Sections in the United Kingdom, Ireland and the General Overseas Section early in 1975, and any non-member wishing to receive the registration form should write to the Director & Secretary at the Association's offices before the end of this year.

News of Members

Mr J. McMillan, an Ordinary Member attached to the Manchester Section and an Associate in the Professional Grade, has recently joined Whitfield & Son Limited as Manager in charge of the Division dealing with the distribution of special chemicals and raw materials to the surface coatings industries. Mr McMillan was previously with Bayer Chemicals Limited.

Mr J. Smethurst, an Ordinary Member attached to the Manchester Section and Fellow in the Professional Grade, is to retire on 31 December as Managing Director of the Pigments Division of Ciba-Geigy (UK) Ltd. after forty years' service with the company. Mr Smethurst, who has been Managing Director of Pigments Division since 1965, is known internationally as a leading figure in the UK pigments industry.

He served as an Elective Member of Council from 1967-69 and also on the Manchester Section Committee. He has also been an active member of the British Colour Makers' Association and is a Fellow of the Royal Institute of Chemistry. After his retirement Mr Smethurst will remain active in business as a part-time consultant.

Dr W. Hughes, an Ordinary Member attached to the Newcastle Section, has been appointed Chairman of the Board of Directors of E. & A. West Limited, a firm of water treatment chemical manufacturers recently acquired by British Titan Limited.

Reunion Dinner for past and present Members of the Council

Following the successful innovation last year of a Reunion Dinner for those members who have served on Council at any time, Council has decided to hold a similar event this year. The Dinner will take place on Wednesday 16 October 1974 at the Cafe Royal, 68 Regent Street, London W1, at 6.30 for 7.00 pm, and informal dress will be worn.

The price of the ticket, for the dinner and wine, will be £6.25

(inclusive of VAT), and a cash bar will be provided at the reception and after the dinner. Past Presidents, Past Honorary Officers Honorary Members and Founder Member have been invited as guests of the Association. All other past and present Members of Council must send the necessary remittance with their completed application form. Any member with service on Council who has not received an application form and wishes to do so should write to the Director & Secretary at the Association's offices.

Register of Members

The following elections to membership have been approved by Council. The Section to which new members are attached is given in italics.

Ordinary Members

CASSON, NORMAN, BSc, Bank of England Printing Works, Langston Road, Loughton, Essex. (*London*)

GABRIEL, GABRIEL, Linderst. 3, D-5000 Koln-1, West Germany. (*General Overseas*)

GILMOUR, ALEXANDER DAVIDSON, BSc, PhD, Conway Coatings Ltd., Landywood Lane, Cheslyn Hay, Walsall, Staffs. (*Midlands*)

GRUNDMANN, HANS, PhD, CIBA-GEIGY (UK) Ltd., Pigments Division, Roundthorn Estate, Wythenshawe, Manchester M23 9ND. (*Manchester*)

HANNAH, MICHAEL JULIAN, 15 The Crescent (off Stanley Road), Alvaston, Derby. (*Midlands*)

IYER, GIRICHANDRAN, BSc, ADOC Ltd. (Japan), Mubaras, PO Box 630, Abu Dhabi, United Arab Emirates. (*General Overseas*)

LEATHLEY, GEORGE DEREK, 7 Thomas Rea Place, Te Atatu South, Auckland 8, New Zealand. (*Auckland*)

MA, CHOY CHOW, BSc, MSc, ASDC, Department of Polymer & Fibre Science, UMIST, Sackville Street, Manchester. (*Manchester*)

PEARCE, DAVID ARTHUR, B.Tech, 38 Aberdeen Street, Holderness Road, Kingston-upon-Hull, Yorkshire. (*Hull*)

PRINN, TREVOR JAMES, BSc, PGH Industries (NZ) Ltd., 61 Victoria Street, Onehunga, PO Box 13-231, New Zealand. (*Auckland*)

WILCOX, DAVID JOSEPH, 10 Newtondale Avenue, Royton, Oldham, Lancashire OL2 5TT. (*Manchester*)

WRIGHT, GRAHAM LESLIE, Box 22-122, Otahuhu, Auckland, New Zealand. (*Auckland*)

Associate Members

LONISHEN, DIETER, Bayer (Ireland) Ltd., Industrial Estate, Kill o' the Grange, Dun Laoghaire, Co. Dublin. (*Irish*)

PERKINS, CLIFFORD, 23 Emsleigh Road, Heald Green, Cheshire. (*Manchester*)

SMITH, LEO REES, 36 Velma Road, Hillcrest, Auckland 10, New Zealand. (*Auckland*)

WHITE, DAVID JAMES, BSc, 12 Poplar Close, Roxton, Bedford. (*Thames Valley*)

Section Programmes for 1974/75 Session

Main Association Events

1975

Tuesday 22—Friday 25 April OCCA—XXVII Technical Exhibition, to be held at the Empire Hall, Olympia, London W14.

Tuesday 17—Friday 21 June OCCA Biennial Conference 1975, Scarborough, Yorkshire England, entitled "The performance of surface coatings—does the reality match the theory?"

Bristol

Unless otherwise stated, all meetings will be held at the Royal Hotel, Bristol, at 7.15 p.m.

1974

Friday 27 September "Masonry coatings" by Mr P. Whiteley of the Building Research Establishment.

Friday 25 October "Design for wallcoverings" by Mr G. R. Marks of ICI Ltd. Ladies Evening.

Friday 29 November "Precious metals for surface coatings" by Mr D. Blower of Engelhard Industries Ltd.

1975

Friday 31 January "Liquid inks and their development" by Mr H. C. C. Whitehead of Coates Bros. & Co. Ltd.

Friday 28 February Lecture to be arranged.

Friday 21 March "High performance pigments for printing inks and paints" by Mr A. E. Honiball and Mr B. H. Witham of Ciba-Geigy UK Ltd.

Friday 11 April Annual Dinner Dance, Mayfair Suite, Bristol.

Friday 25 April Annual General Meeting.

Hull

Unless otherwise stated, the meetings will be held at 6.30 p.m. at the George Hotel, Land of Green Ginger, Hull.

1974

Friday 4 October Annual Dinner Dance, to be held at Cave Castle, South Cave, Nr. Hull.

Monday 7 October "The protection of structural steel" by J. R. Bourne, Mebon Ltd. Joint meeting with the Institution of Chemical Engineers, at the Haven Inn, Barrow Haven, Lincs, at 6.30 p.m.

October Date to be notified. Student evening—"Microscopy" by Mr K. Green at the Hull Technical College.

Monday 4 November "The industrial application of organic titanates—with particular emphasis on surface coating applications" by Dr D. W. Brook, Titanium Intermediates Ltd.

Monday 2 December "Bulk storage of highly flammable low-flash solvents" by Mr J. B. Jolliffe, Technical Bulk Service.

1975

Monday 6 January "Influence of paint additives on film properties" by Mr W. H. Lakin, Hardman and Holden Ltd.

Monday 3 February "Science and crime" by Mr G. Devonport, BSc, North Eastern Forensic Science Laboratories, Harrogate.

Monday 3 March Ladies evening. "Cosmetics" by Mr D. Morris of Helena Rubenstein Laboratories.

Irish

Unless otherwise stated, all meetings will be held at the Clarence Hotel, Dublin at 7.45 p.m.

1974

Friday 20 September Ladies Night. Speaker to be announced later. Lecture followed by Cheese and Wine Party.

Friday 18 October "Industrial finishes" by Mr D. Pountain of Berger Paints (Ireland) Ltd.

Thursday 14 November Annual Dinner Dance.

Friday 6 December "Some aspects of modern printing ink technology" by Mr K. Ponds of Ault & Wiborg Ltd.

1975

Wednesday 22 January "Current trends in synthetic resins" by A. R. H. Tawn, FRIC, FlinstPET, FIMF, FTSC, of Coates Bros. & Co.

Wednesday 19 February "Ireland—agricultural or industrial" by Mr L. Sheedy.

Wednesday 19 March "Science and the detection of crime" by R. Simon, BSc, of the Institute for Industrial Research and Standards, and Detective Supt. Daniel Murphy of the Garda Síochána Technical Bureau.

Wednesday 16 April Annual General Meeting.

London

All meetings will be held at the Polytechnic of the South Bank, Borough Road, London SE1, at 7.00 p.m., unless otherwise stated.

1974

Friday 27 September Ladies Evening.

Wednesday 16 October "High performance violet, red, orange and yellow pigments for automotive and industrial finishes" by Dr P. Lutz, Du Pont De Nemours, USA.

Wednesday 20 November "Coatings for immersed conditions." One-day joint Colloquium with the Institute of Corrosion Technology at Thames Polytechnic, Woolwich commencing at 9.30 a.m.

Friday 29 November Ladies Night at the Cafe Royal.

Tuesday 10 December "Schlieren optics: a convenient new method for characterizing

paint and other surfaces" by Mr D. M. Howell, Paint Research Association.

1975

Tuesday 21 January "Aqueous coatings." One-day symposium.

Monday 10 February "The painting of metal bridges—historical and current trends" by Mr P. Ferguson, Materials Quality Assurance Directorate at East Ham College of Technology, High Street South, London E6.

Tuesday 11 March "European Lecture—interfacial phenomena of inks," by Mr W. Hansen, Scandinavian Institute for Paint and Printing Ink.

Friday 18 April Annual General Meeting.

Manchester

Unless otherwise stated, all meetings will be held at 6.30 p.m. at the Manchester Literary and Philosophical Society, 36 George Street, Manchester.

1974

Friday 11 October "High-performance violet, red, orange and yellow pigments for automotive and industrial finishes" by Dr P. Lutz, Supervisor of automotive formulations, Du Pont USA.

Friday 18 October Annual Dinner Dance, Piccadilly Hotel, Piccadilly Plaza, Manchester 1.

Friday 8 November "Water thinnable coatings" by Mr R. H. E. Munn, Cray Valley Products Ltd.

Friday 6 December "Let her paint an inch thick—to this favour must she come" by Mr A. C. Bushnell, County Hall, County Analysts' Dept., Preston Lancs.

1975

Friday 10 January Joint Meeting with the Institute of Printing. "Audio visual systems—are they a threat to the printing industry?" by Mr J. V. Ashworth, Manager, Telecommunications, IPC Services Ltd. *To be confirmed.*

Friday 14 February "Some forward views on the energy situation and raw material supplies" by Dr J. K. Hambling of BP Chemicals Ltd.

Friday 14 March "The pigmentation of ultra-violet curable systems" by Dr B. E. Hulme, Tiioxide International Central Labs, Stockton-on-Tees.

Friday 11 April AGM. Venue to be arranged.

Student Group

All meetings to be held at the Manchester Literary and Philosophical Society, Manchester, at 4.30 p.m. unless otherwise stated.

1974

Wednesday 2 October "Titanium dioxide—its manufacture and properties" by Mr D. Charlton of Tiioxide International Ltd.

Wednesday 23 October "Powder coatings" by Mr N. H. Seymour of Sterling Varnish Co. Ltd.

Wednesday 20 November "Metal pretreatment" by Mr C. Pearson of Pyrene Chemical Services.

1975

Wednesday 15 January "Instrumental colour control" by Mr G. H. Eastwood of Crown Paints Ltd.

Wednesday 26 February "The prevention of bacterial corrosion of mild steel with paint films" by Mr A. V. Robinson of Camrex (Holdings) Limited.

Midlands

Unless otherwise stated, all meetings will be held at 6.30 p.m. at the Birmingham Chamber of Commerce and Industry, PO Box 360, 75 Harborne Road, Birmingham B15 3DH.

1974

Friday 20 September Ladies' Evening at the Westbourne Suite, Botanical Gardens, 7.00 p.m.

Friday 27 September "The outlook for petrochemical derived raw materials for the paint industry" by M. E. Robinson, ICI Ltd., Petrochemicals Division, at the Apollo Motel, Hagley Road, Birmingham.

Friday 18 October "Water or what?" by K. O'Hara, Cray Valley Products Ltd.

Friday 15 November "An individual's thoughts on paint—past, present and future" by H. J. Clarke, Postans Paints Ltd., at the Apollo Motel, Hagley Road, Birmingham.

1975

Friday 17 January Annual Dinner lecture. "Extenders—their present and future position" by R. J. Simpson and D. Huxtable, English China Clays Ltd.

Friday 21 February "Chemicals from coal—the impact of the energy crisis" by P. Joy, British Steel Corporation, Chemical Division.

Friday 21 March J. Newton Friend lecture at 7.30 p.m. "Interior design" by J. Simkins, Alexander Fine Arts.

Friday 18 April Annual General Meeting.

Trent Valley Branch

Unless otherwise stated, all meetings will be held at 7.00 p.m. at the British Rail School of Transport, London Road, Derby.

1974

Thursday 10 October "Economic use of titanium dioxide in paint" by Mr J. G. Balfour of Tioxide International Limited.

Thursday 7 November Social event—to be advised.

Thursday 14 November "Salary or job satisfaction" by Mr I. S. Moll (Consultant).

1975

Thursday 9 January "Surface pretreatment and application" by Mr P. B. Wharton of Loyné (Site Contracts) Ltd.

Thursday 13 February "World economic events effecting petroleum and its derivatives" by a lecturer from Esso Chemicals Ltd.

Thursday 13 March "Present developments and future trends in water thinnable coatings" by Mr D. A. Wallace of Vinyl Products Ltd.

Thursday 10 April Combined AGM and social evening. *Venue to be advised.*

Newcastle

Unless otherwise stated all meetings will be held at the Royal Turks Head Hotel, Grey Street, Newcastle upon Tyne, at 6.30 p.m.

1974

Thursday 3 October "Some examples of electrophoretic coatings for cathodic deposition" by Dr H. Verdino, Vianova, Austria.

Thursday 7 November "Patent law, with particular reference to the EEC" by Dr Wild, Berger Jenson and Nicholson Ltd.

Thursday 5 December "Paint hazards in the marine industry" by Mr C. P. Douglas, Swan Hunter Group.

1975

Thursday 9 January "Effects of employee participation on management" by Mr J. W. E. Morgan and Mr J. Burrell, British Titan Products Ltd.

Thursday 6 February "Adhesives and sealants" by Mr N. Macdonald, Evode Ltd.

Friday 21 February Ladies' Night at Five Bridges Hotel, Gateshead.

Thursday 6 March Short papers by members of the Section.

Thursday 3 April Annual General Meeting.

Scottish

Unless otherwise stated, all meetings will be held at Beacons Hotel, 7 Park Terrace, Glasgow G3, at 6.00 p.m.

1974

Thursday 10 October "The colour of azo pigments" by Dr K. Hunger of Farbwerke Hoechst AG. Joint meeting with Society of Dyers and Colourists.

Thursday 14 November "Printing inks—developments to meet modern requirements" by Mr G. H. Hutchinson of Croda Inks Ltd.

Thursday 12 December "National Engineering Laboratory—function and activities" by Mr J. McCallan (NEL.)

1975

Friday 10 January Annual Dinner Dance at the Albany Hotel, Glasgow.

Wednesday 15 January "Soccer scene" by Mr A. Glen of Isaac Spencer & Co. Ltd., and Mr A. McLeod of Ayr United FC.

Thursday 13 February "Paint pollution and possibilities" by Mr R. H. E. Munn of Cray Valley Products Ltd.

Thursday 13 March "Golf." Film and talk by Mr S. L. McKinlay of the Glasgow Herald.

Eastern Branch

All meetings will take place in the Carlton Hotel, North Bridge, Edinburgh at 7.30 p.m. unless otherwise stated.

1974

Saturday 5 October Joint meeting with the Scottish Student Group. Lecture on "Modern phthalocyanine pigments" by J. B. Blackburn, Ciba-Geigy, starting at 10.30 a.m. in the Lady Nairn Hotel, Willowbrae Road, Edinburgh, followed by lunch and the annual skittles match.

Wednesday 6 November "The laser Zec meter" by J. G. Penniman Jnr, The Pen Kem Company, Croton-on-Hudson, New York, USA. Joint meeting with the BPBIF, commencing at 11.15 p.m.

Wednesday 18 December "Problems of a packaging chemist" by R. Logan, Van Leer (UK) Ltd.

1975

Wednesday 15 January "Chloride process titanium dioxide pigments, properties and applications" by G. R. Siddle, Laporte Industries Ltd.

Friday 7 February Burns supper in the Lady Nairn Hotel, Edinburgh.

Wednesday 19 February "Photography" by D. Rosie, Craig and Rose Limited.

Wednesday 19 March AGM, followed by film; meeting starts at 7.00 p.m.

Wednesday 16 April "A topic on the testing of organic pigment" by a speaker from Ciba-Geigy.

Saturday 7 June Annual car treasure hunt and barbecue.

Student Group

Unless otherwise stated, all meetings will be held at Three Pigeons, 573 Sauchiehall Street, Glasgow at 10.15 a.m.

1974

Saturday 5 October Joint Meeting in Edinburgh with Eastern Branch. Lecture by Mr I. B. Blackburn, Ciba-Geigy (UK) Limited entitled "Modern phthalocyanine pigments."

Saturday 9 November Mr L. H. Silver (President) "Twenty-five years in the paint industry."

1975

Saturday 25 January Works visit to Hunterston Power Station, West Kilbride.

Saturday 15 February "Chrome pigments and their usage" by Mr A. C. D. Cowley of ICI Ltd.

Saturday 15 March "Recent development in wallcoverings" by a lecturer from the Walpamur Co. Limited.

Thames Valley

Unless otherwise stated, all meetings will be held at 7.00 p.m. at the Beech Tree Hotel, Maxwell Road, Beaconsfield, Bucks.

1974

Thursday 26 September Visit to Fulmers Institute. Buffet etc.

Thursday 24 October "Strategy of modern purchasing" by Dr Finch, Croda Inks Ltd.

Thursday 28 November "Forensic examination of inks and paints" by Mr R. M. Kevern.

1975

Thursday 23 January "Acrylic emulsions" by Dr Washbourne, Rohm & Haas (UK) Ltd.

Friday 7 February Buffet Dance—Great Fosters Hotel.

Thursday 27 February "Protection of off-shore oil rigs" by Mr F. G. Dunkley.

Thursday 20 March "Artists' colours" by Mr A. Brown, Winsor & Newton Ltd.

Saturday 12 April AGM. Venue to be arranged.

Student Group

Unless otherwise stated, all meetings will be held at 4.00 p.m. at Slough College in the main Lecture Theatre.

1974

Thursday 3 October "Polymers" by Dr Clarke.

Thursday 7 November "Dispersion of titanium dioxide in modern paint making machinery" by D. Craig, Tioxide International Ltd.

Thursday 5 December "Developments in water-thinned paints" by J. C. Bax, Scott Bader Ltd.

1975

Thursday 6 February "Additives" by Mr Lakin, Hardman & Holden Ltd.

Thursday 6 March Works Visit. *Details to be announced.*

Thursday 8 May "Colour matching and measurement" by Mr B. Jeffs, ICI Ltd. Paints Division.

West Riding

1974

Tuesday 10 September Speaker and title to be announced.

Tuesday 8 October "Amid-imide resins" by a speaker from May and Baker.

Tuesday 12 November "Automation in the paint laboratory" by W. A. Straw, and D. S. Briggate.

Friday 29 November Dinner and Dance.

Tuesday 10 December "Salaries and job satisfaction" by I. Moll.

1975

Tuesday 14 January "Developments in painting techniques in British Rail" by a speaker to be announced.

Tuesday 11 February "Paint packaging" by C. I. Mellor, Metal Box Company Limited.

Tuesday 11 March "Advances in condensation polymers" by Prof. I. Goodman.

Tuesday 8 April AGM

May Luncheon lecture; date and venue to be announced.

Newcastle Section

British Titan Cup

The thirteenth annual tournament for the British Titan Cup was played for on Saturday 15 June 1974, at Beamish Park Golf Club. The competition, which was a four ball/better ball against bogey, was won jointly by Messrs J. G. Bell of Crown Paints Ltd. and J. Clark of Tioxide International Ltd.

This is the first occasion that the competition has been held at this golf club but not the first time that J. G. Bell's name has appeared on the cup. This win means that he has been joint winner on no fewer than five occasions.

The cup was presented to the winners by the Vice-Chairman of the Newcastle Section, Mr K. V. Hodgson.



The British Titan Cup was won jointly this year by J. G. Bell (left) and J. Clark

Admissions to Professional Grade

The following admissions have been approved by the Professional Grade Committee:

Associates

Shyam Sharan Jangbahadur (*General Overseas—Iran*)

Frank Joseph Moreham (*Newcastle*)

Alan James Durdley (*Newcastle*)

Norman William Piper (*Manchester*)

Application

Forms of application for admission to the Professional Grade may be obtained from the Director & Secretary at the Associations' offices. Full regulations for admission including recent amendments were published in the July 1974 issue.

The full list of members of the Professional Grade is published yearly in the December issue of this *Journal*.

Paint Technology Manuals

Works Practice

Members are reminded that copies of part seven of the Association's series of Paint Technology Manuals entitled "Works Practice" are still available from the Association's offices at £3.00 each, payable in advance.



Oil and Colour Chemists' Association

President: L. H. SILVER

General

The Oil and Colour Chemists' Association was formed in 1918, to cover paint, printing inks, pigments, varnishes, drying and essential oils, resins, lacquers, soaps, linoleum and treated fabrics, and the plant, apparatus and raw materials useful in their manufacture. In 1924 it absorbed the Paint and Varnish Society. The stated purpose of the Association is to promote by discussion and scientific investigation the technology of the industries concerned with the above-mentioned products, and to afford Members opportunity for the interchange of ideas. This is achieved by the regular holding of ordinary meetings at which papers are presented, and the organisation of annual technical exhibitions, biennial conferences, educational activities and practical co-operative experimental work. Details of these activities are given in the *Journal of the Oil and Colour Chemists' Association*, which is published monthly, and whose pages are open to receive communications and other pronouncements on scientific and technical matters affecting the Members of the Association and the industries concerned. The Association's meetings also afford opportunities for Members to meet informally and socially.

Sections

There are Sections of OCCA in Auckland, Bristol, Hull, Ireland, London (with a Southern Branch), Manchester, the Midlands (with a Trent Valley Branch), Newcastle upon Tyne, Scotland (with an Eastern Branch), South Africa (with Branches in the Cape, Transvaal and Natal), Thames Valley, Wellington, and the West Riding, and these are responsible for the conduct of their own local affairs. There is also a General Overseas Section. There is also a close alliance between the Association, the Federation of Societies for Paint Technology in the United States, and the Fédération d'Associations des Techniciens de l'Industrie des Peintures, Vernis, Emaux et Encres d'Imprimerie de l'Europe Continentale (FATIPEC). The Association also maintains cordial relations with the Scandinavian Federation of Paint and Varnish Technicians (SLF).

The five Sections previously maintained by the Association in Australia formed (1.1.68) the Oil and Colour Chemists' Association Australia, having the same aims and activities as, and working in close liaison with, the parent body.

Membership

Ordinary Membership is granted to scientifically trained persons, and Associate Membership to others interested in the industries covered. An optional Professional Grade, conferring designatory letters, is open to Ordinary Members. Student membership is open without restriction to persons under the age of 21 and to those up to 25 who are following a course of technical study. An entrance fee of £1 (plus VAT) is payable by Registered Students and £5 (plus VAT) by Ordinary and Associate Members. Applications for membership are invited from suitably qualified persons who are engaged or otherwise interested in the industries noted above. Applications, which should be supported by two Members of the Association (one of whom must be an Ordinary Member), should be forwarded to the Director & Secretary at the address given below. Application forms and full details of membership may be obtained from the offices of the Association.

Professional Grade

The Association recently introduced (1971) an *optional* professional grade for its Ordinary Members, giving the designatory letters FTSC (Fellow in the Technology of Surface Coatings), ATSC (Associate in the Technology of Surface Coatings), and LTSC (Licentiate in the Technology of Surface Coatings). Full details are available upon request from the Association. Where Membership has lapsed, previous periods of Ordinary Membership count towards the total required under the regulations, as set out in the July 1974 issue of *JOCCA*.

Exhibitions

A technical exhibition is held annually at Olympia; Members are sent copies of the *Official Guide* several weeks in advance, in order to plan their itineraries. A charge is made to non-members for admission and for copies of the "Official Guides." Non-members should apply, in writing, to the Director and Secretary for copies of the *Official Guide* and admission ticket.

Conferences and Symposia

The Association organises large, biennial technical conferences, the papers for which (together with discussions) are published in the *Journal*. Sections of the Association in the UK and abroad hold symposia and these, too, are reported in *JOCCA*.

Publications

Journal of the Oil and Colour Chemists' Association (JOCCA) is published monthly and includes a yearly index in the December issue. The subscription rate to non-members is £15.00 p.a. (s38) post free; payable in advance. Single copies may be purchased for £1.50.

Introduction to Paint Technology (Second Edition with additional chapter). With illustrations, 187 pages and index £2.00 (including postage).

Paint Technology Manuals (Parts 1, 2, 4, 5 and 6 at present out of print).

Part 1 "Non-convertible Coatings"

Part 2 "Solvents, Oils, Resins and Driers"

Part 3 "Convertible Coatings," Second Edition, pp. 350, £2.80

Part 4 "The Application of Surface Coatings"

Part 5 "The Testing of Paints"

Part 6 "Pigments, Dyestuffs and Lakes"

Part 7 "Works Practice," pp. 218, £3.00

Director & Secretary: R. H. Hamblin, MA, FCIS,
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OCCA Conference 1975



Call for papers

The next biennial OCCA Conference, with the theme **The performance of surface coatings—does the reality match the theory?** will be held at Scarborough, England, from 17 to 21 June 1975.

Full preprints of the papers being presented will be published for despatch to delegates in advance of the Conference and it is important, therefore, that anyone wishing to submit a paper for consideration should notify his intention as soon as possible to:

A. R. H. Tawn, Esq, FRIC, FInstPet, FIMF, FTSC,
34 Crest View Drive, Petts Wood, Kent BR5 1BY, England.

Full details of registration for the Conference will appear from time to time in this journal.

CLASSIFIED ADVERTISEMENTS

Classified Advertisements are charged at the rate of 75p per line. Advertisements for Situations Wanted are charged at 20p per line. A box number is charged at 20p. They should be sent to the Director & Secretary, Oil & Colour Chemists' Association, Priory House, 967 Harrow Road, Wembley, Middlesex HA0 2SF

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OCCA XXVII EXHIBITION

22-25 April 1975

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A one-day symposium with the above title is being arranged by the Oil & Colour Chemists' Association in conjunction with the Paintmakers Association of Great Britain, and will be held at University College, London, on 17 September 1974. Both Members and non-Members are welcome to attend and should write immediately to the Director & Secretary, Oil & Colour Chemists' Association at the Association's offices.

Oil & Colour Chemists' Association

Paint Technology Manuals

Part 7: Works Practice

Contents include:

Chapter 1—The factory. Siting and layout

Chapter 2—Raw materials. Storage and handling

Chapter 3—Varnish and media manufacture:

- (a) Cold processes
- (b) Manufacture in open vessels
- (c) Manufacture in closed vessels

Chapter 4—Paint manufacture:

- (a) General
- (b) Processes involving premixing
- (c) Processes without premixing
- (d) Layouts, maintenance, filling and warehouse

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Chapter 6—Legal requirements and regulations

Chapter 7—Factory hazards and safety precautions

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CLASSIFIED ADVERTISEMENTS

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PUBLICATIONS

introduction to paint technology

The sales of this Association publication now exceed 16,000, and now includes an eleventh chapter entitled "Recent Development." The book contains 204 pages including 11 line diagrams, 8 photographs of common paint defects, and comprehensive index.

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Copies are available, at £2.00 (post free in UK), from the Association's offices.

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OLYMPIA LONDON APRIL 1975

The motif for the twenty-seventh Technical Exhibition of the Oil and Colour Chemists' Association, designed by Robert Hamblin, continues the theme of OCCA-26 (when attention was drawn to the European Economic Community) by extending it to show the world-wide interest aroused by the Association's annual Exhibitions in London, which in recent years have attracted visitors from more than 50 overseas countries.

PLEASE COMPLETE AND RETURN THIS COUPON FOR A COPY OF THE INVITATION TO EXHIBIT

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