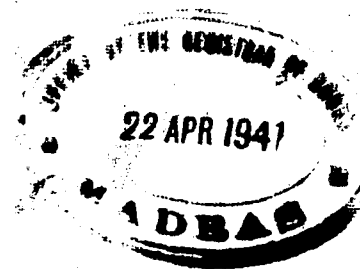


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PAINT

A QUARTERLY **JOURNAL** DEVOTED TO
PAINT MATERIALS & PAINTING METHODS

449429



Editor: P. GOPAL RAO, M. Sc.

Vol. 2 JANUARY 1941 No. 1

CONTENTS

COMMENT	...	1
DRIER IN PAINT (III)	...	4
PAINT INDUSTRY	...	7
SOME OBSERVATIONS ON COLOUR	...	14

SODHAN
THE COTTAGE INDUSTRIES ASSOCIATION
TENALI

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ECONOMICS OF SWADESHI

"I do not know much about tariff
but I do know this much :—

"When we buy goods abroad we get
the goods and the foreigners get the
money; when we buy goods made at
home we get both the goods and the
money"

—Abraham Lincoln

COMMENT

WE have left behind 1940 — an year of anxiety for the civilised world in general, and entered 1941 with better hopes about future. This

What we issue marks our start on the second year of service to the
Aim at Indian Paint World. We wish a happy and prosperous
new year to all our contributors and readers. We hope
that they too will no doubt wish us many happy returns.

On this happy occasion we would like to re-iterate our firm resolve to strive hard to serve the Indian paint world, raise the painting standard in our country, form a connecting link between the manufacturer and the consumer, and help the manufacturer to concentrate on producing qualities best suited to our climatic conditions instead of falling an easy prey to the unhappy tendency to exploit the ignorance of the paint consumer.

As matters stand the ignorance of the paint consumer is appalling. In the keen struggle for existence under the present one-sided economic system, *Exploit or Perish* policy seems to rule supreme. Even responsible men, who are in a position to help, have unfortunately developed a tendency to shirk responsibility and try to throw the blame on others when things go wrong.

If consumers are educated to appreciate the necessity of using good qualities to get satisfactory results most of the inferior qualities, so popular in the present day market, will not be there. The Works Chemist will then be relieved of the unpleasant monotony of cheapening paints to the detriment of quality. He will be able to devote himself whole-heartedly to the quality improvement best suited to our country and climatic conditions. The task of educating the consumer is not easy. Only a concerted effort by Paint Manufacturers, Architects, Engineers and Painters can achieve it. We are here to co-ordinate their individual efforts and serve the best interests of the Indian paint world. We shall be glad to receive contributions for publication from active members in the industries concerned.

In the industrial world paint industry occupies a special position. It is not a basic industry but all the main industries depend upon it.

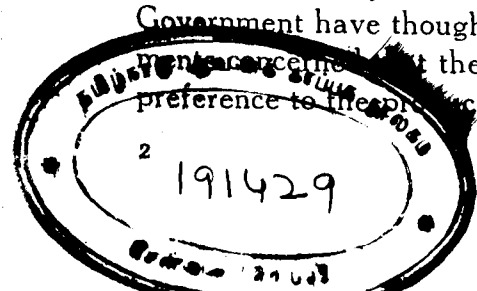
COMMENT

Thus the position of paint industry in a country is a fair index of its industrial advancement. Of late we are hearing a lot about industrialisation. Economic planning committees, research boards and a host of scheming bodies have come into existence. **How about Industries** The best way, it is said, to shelve a proposal or stifle a scheme is to refer it to a select committee. The present craze for committees and surveys, we are afraid, does more harm than good to our industrial growth.

Axiomatic truths are being neglected. Grammar systematises a language and scholars beautify it. For all this the language should exist. Grammar cannot bring a new language into existence, nor can scholars beautify an imaginary language. The same is the case with industries. There should be industries to be organised and improved. Hunger is not satisfied by planning about the proper way of eating or by doing research about nutrition values of different diets. Much better work will be done if all energy is devoted to start industries. At present we should have one outlook and one aim — to start new industries. Afterwards we can organise and improve them.

Starting new industries is easier said than done. Either the Government or the public should unreservedly encourage such attempts.

Government and Industries As matters stand, however, our Government, whether it be by constitution, temperament or other commitments is not able to give the necessary encouragement. A typical example is worth mentioning: In the Madras Presidency an infant paint industry, perhaps the only one in the presidency and a cottage industry to boot, applied to the Provincial Government for encouragement and preference for a period of five years. The reports of the Chief Engineer, P. W. D., General Buildings and Roads, Madras, show that the quality of paints produced by the Cottage Industry compares favourably with that of paints made by other reputable firms of long standing, in up-to-date factories. Under such circumstances any Government interested in the industrial growth of the province would have unreservedly encouraged the infant paint industry. The Madras Government have thought otherwise. They informed all heads of departments concerned that they do not consider that there is any need to give preference to the products of the Cottage Industry.



PAINT

JANUARY, 1941

COMMENT

It is worth while noting in this connection that the paint market in the Madras Presidency is in the hands of foreign vested interests. To evade the tariff walls technically they have limited a manufacturing concern in India. In all other respects they are foreign to us.

These powerful foreign interests advertise their goods as Indian and manage to have the preference allowed by the Government to goods manufactured in India, interpreted in their favour. Purely Indian concerns with Indian capital, labour and management, are pushed to the back ground. *It is really the small indigenous concerns which are trying to come up against heavy odds that are most in need of preference.* To put them on a par with powerful foreign interests who have technically evaded tariff walls and bear no scruples to crush the really Indian Industries in their infancy is to discourage local enterprise. While this is a fair index of the step-motherly interest of provincial governments in local enterprises the Central Government's apathy is fairly reflected in the recent speech of Mr. Walchand Harichand of the Scindia Steam Navigation Company.

So it is no use appealing to the Government and wasting time over it. The public should be educated to play their part and contribute their mite to the country's industrial growth. They should be made to unreservedly encourage indigenous industries and take the Swadeshi vow. At the same time they should be made to realise "*What is made in India is not necessarily Indian.*"

At the same time Indian Industrialists should realise that experts are not a monopoly of foreign countries. The present tendency to take pride in ignoring local talent and importing foreign experts paying them fabulous salaries, should be checked. Industrial self-sufficiency is not achieved by entrusting our key positions to foreigners.

Hello! Industrialists We cannot afford to create a privileged class of foreigners and hand over our industrial nerve centres to them. If experts have to be imported let them be brought on contracts for definite periods. During their tenure we should see that our men are trained to take their positions on the expiry of the contract periods.

No doubt we have to "Industrialise or perish" but that industrialisation should be in the best interests of our country.

JANUARY, 1941

PAINT

3

Drier In Paint III

BEFORE considering other aspects of driers a passing reference at least should be made to a new type of drier gradually coming into prominence. (Naphthenates). Till very recently driers were either rosinsates or linoleates. Since the organic part in rosinsates is rosin with low water resistance and low film elasticity it is taken for granted that linoleates are better than rosinsates. Also since the efficiency of the drier depended on the metal content the precipitated driers were preferred to fused driers. It is now found that the drier forming metal when combined with the acids in rosin or linseed oil does not show cent percent efficiency. It is stated that this is due to the unsaturated nature of the acids in linseed oil and rosin. Also due to this unsaturated nature of the organic part of the drier the skinning of driers in a semi-solid form resulted in serious wastage. The above defects are to a great extent eliminated when drier forming metals are combined with saturated organic acids. The class of organic acids most used for this purpose are Naphthenic acids. Since correctly processed Naphthenic acids are very stable saturated bodies, the metal combined with them in such a way that the drier forming metal was in a very effective state. Thus these naphthenates of lead, cobalt and manganese give much better drying for the same metal content.

Since the addition of driers to paints should be done with care it is essential for the user to know the exact metal content of the drier to be used. The main defect in the driers of the bazar is this. The metal content is not given. The driers in the bazar are found either as pastes or liquids. Of these the liquids are to be preferred since they are easily incorporated in paints. The paste driers some times called patent driers are, in majority of cases, useless as driers. For the most part they contain ordinary whitening with a very small proportion of lead or manganese salts ground in linseed oil. Sometimes they contain even water. The proportion of active drier in them is very inconsistent. So the use of liquid drier (also called terebine) is advisable. For the ordinary painter using ready mixed paints or stiff paints and double boiled linseed oil the use of drier is seldom necessary.

The property of the drier and its effect on paint differs according to the drier forming metal:—

Lead driers are very weak in drying action but the drying effected by lead driers is very thorough. The film dries uniformly from bottom to top and there is no tendency to form a skin on the surface while the paint just below is not properly dried. It is also reported that oil films with lead drier are more stable with the drier than without it. Thus lead driers are used where tough weather resisting films are required. The action of the lead drier is not effected by humid conditions or lower temperatures. So they can be used with advantage in paints to be used under unfavourable weather conditions during rains or in winter. The defect called blooming in varnishes (which occurs under moist atmospheric conditions) is not evident when lead driers are used. Lead driers even when added in slightly larger quantities do not effect film durability. It is however said that paints containing lead driers have a tendency to settle hard in containers but such considerations are more for the manufacturer of export paints than for the painter who mixes his paint and finishes it in a few days.

Manganese driers are much more powerful than lead driers but they have some serious defects which restrict their use. They are never used singly but in combination with lead. Manganese driers make the film dry from surface to the interior, but they do not promote the skinning of paints and varnishes in containers. The chief defects of these driers are (1) their drying action is greatly diminished under cold and moist conditions, (2) in white paints and pale varnished the discolouration of films due to the manganese drier is very evident. Besides, paints and varnishes containing manganese are known to resoften and become tacky under bad ventilation conditions. Thus an oil cloth prepared by using manganese as a drier will look quite dry but become tacky again if kept closed in a box for a few months. Also films containing manganese take relatively long time to dry to touch but when once the film begins setting it dries in a very short time. Manganese gives harder films than lead.

Cobalt driers are most powerful but they promote surface drying of films to such an extent that skinning troubles arise in many cases.

This surface drying leads to many defects as wrinkling, sensitivity to water, early film break down etc. Any excess of cobalt drier will undermine film durability. So it is not advisable, for **Cobalt driers** any except the most experienced, to use cobalt drier to accelerate the drying. Lead drier is the safest to use. It is suggested that skinning trouble with cobalt driers is minimised if it is cooked with the oil or varnish before adding the turpentine or other thinner instead of adding it with the thinners. The effects of individual driers as described above are profoundly altered when used in combination: thus lead used with manganese is a better drier than lead or manganese used singly. The same is the case with lead-cobalt or lead-manganese cobalt combinations. As in the use of pigments, in driers also experience has shown that combinations are better than the use of any metal singly. The drying efficiency of cobalt and manganese is much increased by the addition of lead.

There are some other factors which influence the behaviour of driers in paints and varnishes. In paints the properties of the pigment portion determines the nature of the paint film. Pigments may be divided into three classes: 1. those that have a drying action, 2. those that neither accelerate nor retard drying and 3. those that retard drying. Red lead and white lead belong to the first class as also umbers. Though Zinc oxides have no accelerating effect on drying they tend to make films dry very hard. Such inert pigments as Iron oxide, Antimony oxide as also Titanium white etc. fall under the second category. Such paints require normal proportion of driers. There are however some pigments, notably carbon blacks which retard the drying of paints containing them. For our purpose it is enough to think that these substances make the driers inactive either by poisoning them or by removing them from the sphere of action. Whatever it be paints containing such pigments should contain extra drier dose to provide for this exigency. In such paints a proportion of litharge or redlead is ground in to improve the drying properties. It is also found that genuine wood turpentine has an accelerating effect on drying. The use of drier in paint should imply an understanding of all the above factors and any carelessness or neglect in its use may completely spoil an otherwise good paint. Drier in paint is comparable to a double edged weapon which may make or mar paint durability according to the manner in which it is used.

PAINT INDUSTRY

A PLEA FOR DECENTRALISATION

(A Paint Technologist)

[At our express request to write about Indian Paint Industry a paint technologist has sent us this for publication. We invite our readers to frankly discuss the pros and cons about the plea put forward. —Ed.]

SUNSHINE, humidity and temperature changes, collectively referred to as weathering agents, are very destructive to structures in our country. The familiar sight of rusted iron-work, cloven window sills and deteriorated door-ways provide a pointed reference to this decay of structures from weathering agents. The importance of structural maintenance by periodical painting is proved.

India is rich in paint raw material. Linseed is a major crop in Northern India. Deposits of pigment forming metals as lead, zinc, antimony, titanium, iron, chromium etc., occur in plenty. Pine forests, Petroleum and Coal deposits are sufficient for our requirements. Lac is abundant. Endowed with such natural resources paint industry made great strides in ancient India. A definite position was given to paint industry in the then existing social order. Painting and paint manufacture were coordinated as a composite industry and developed as a family occupation. Production and consumption were not centralised. Quality improvement instead of mass production was encouraged. The industries in general were organised for the benefit of society. As such a spirit of service pervaded the industrial net work. The industry attained an enviable position through family efforts over generations. The paintings of Ajanta are perhaps an aspect of this many-sided development.

With the rise of European power in India the industrial growth in our country took a different turn. Spirit of service disappeared. The ruthless exploitation of many for the benefit of few took its place. While wealth, and with it, the industrial dictatorship, gravitated in a minority, the majority of workers and the population of the country in general became poorer year after year. There was famine in plenty.

The impact of this centralised industrialisation with mass production by mechanical methods brought in an unexpected upheaval in the quiet decentralised system so long worked in our country. Through lack of coordinating force and organised resistance individual units died in neglect. Village artisans were compelled to migrate to towns - a creation of centralised industries - to earn a living. The ancient Indian Paint industry can still be seen dying a lingering death in a few families leading a thankless existence in remote villages.

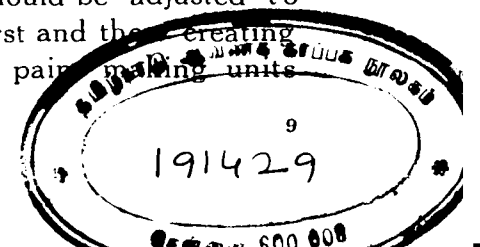
In the west the industry was developed on centralised methods. With the growth of science and its application to industries, painting and paint manufacture became separate industries. Specialisation and mass production were encouraged. While in the west paint industry made great strides and became complex, requiring great skill and knowledge in our country home industries died in isolation and stagnation.

With the disappearance of old time manufacturing methods, without replacement by modern processes general ignorance about paint increased in our country and creative instinct gave place to imitation. Gradually, we became dependent on paint manufacturers abroad for this important material for structural maintenance. Manufacturers abroad have naturally no direct knowledge of our needs and climatic conditions. The outsider viewed our requirements from a different angle. Spirit of service gave way to ruthless exploitation. Direct dealings between the manufacturer and the consumer stopped. A cumbersome middleman, willing to sell his country's interests for a liberal commission, dominated. Quality was made secondary to price considerations. In this loot of country's wealth the ignorance of the consumer facilitated matters. As the country became poorer and its purchasing power deteriorated exploitation under the guise of cheapness became too common a thing to be detected.

No doubt in course of time some paint manufactories were established in our country. But whether foreign owned or Indian managed they imitated the existing order as presented above. They never bothered to face and set right the existing degeneration.

Selfishness got the better of patriotism. The light-hearted maintenance of wood and iron work exposed to one of the most trying climates in the world, due to gross ignorance and 'go in for cheap' mentality, was conveniently over-looked. Instead of concentrating on the manufacture of products that give reliable structural protection coupled with necessary decoration, the Indian manufacturer confined himself to the production of such qualities as happened to be popular in the degenerated market. In general paint formulation was interpreted as the matching of an existing quality of the competitor in order to offer a cheaper substitute. Between the manufacturer and the consumer came a number of middlemen. Any consumer's complaint did not reach the manufacturer in the original form. Also the complaint as such was not viewed with joint responsibility in order to remedy the defect, by altering if necessary the product or the method to suit local conditions. The paint manufacturer blamed the painter and the painter blamed the paint manufacturer for any premature failure. Between them the consumer was let down. The personal attention so characteristic of the old decentralised system almost disappeared. The centralised manufacturer with top heavy establishment and mass production machinery had to find full time work for his existence. He sent round travellers who new best to influence a prospective buyer and took his order for his employer. It was not necessary for the traveller to know enough about paint to help the consumer in the right selection of the material. He sought ways and means to increase sales. The paint consuming public, in general go in for cheaper grades instead of being far sighted enough to realise that the use of an inferior paint simply because its cost per pound is less, is a wasteful method. This common weakness was heartlessly encouraged and systematically exploited. He was seldom made to realise that painting cost is not even 2% of the building expenditure and by economising in this item he is a loser.

The way out obviously is in making the paint manufacturer shoulder the double responsibility of a paint manufacturer and a painter in one. This can only be achieved by decentralisation. The middle-man should be eliminated and there should be direct contact between the producer and the consumer. The production should be adjusted to demand. The reverse way of producing a thing first and then creating a market for it should stop. The decentralised paint making units



should have small and widely territories to cater for, so that they will be able to combine paint manufacture and painting work. Thus the manufacturer works and moves among the consumers and studies the behaviour and durability of his products. In this system the producer will not judge the quality of his products by relying on the results of exposure pannels in his laboratory, under manipulated conditions. He studies them in actual working. Any unforeseen trouble or adjustment will have the direct attention of the manufacturer. In this way the actual working experience under a variety of natural conditions is combined with paint manufacturing experience. Then only will the industry develop in the right way.

But many technologists seriously ask, can paint manufacture thrive as a cottage industry? I will say yes. The cottage industries of old died for lack of coordination. The centralised industries are already facing unsurmountable barriers. Centralisation in industry only succeeds when there are undeveloped territories to be exploited. Their running is too costly for internal self-sufficiency. The clamour for colonies and the root cause of all wars is this centralisation. Since decentralisation and centralisation are different in conception and working the whole proposition should be looked from a different angle. It is now proposed to deal with the way in which paint making can be reduced to a cottage industry to fit in the decentralisation scheme.

Paint manufacture is the final industry in a long chain of interconnected and yet highly specialised industries. As such most of the raw materials required for it are not directly utilisable as they occur in nature. They are the finished products of industries lower down in the series. Paint manufacture is the process of bringing together and blending various liquid and solid constituents to produce a fluid easily applicable to surfaces by brush, spray, or dipping to protect (and decorate) it. The manufacture of solid and liquid constituents also by the same cottage will lead to confusion. As an example let us take the manufacture of a green paint in the ready mixed form. The paint manufacturing cottage should be concerned only with the selection of the proper green powder and medium to blend it into a paint suitable for the requirements of the locality. The manufacture of greens is a separate industry. It is the work of a pigment cottage. The green powders are

produced in one of the following ways according to requirements. 1. By calcining alkali bichromates with a reducing agent. 2. By preparing a yellow lead chromate, from a lead salt and bichromate, and prussian blue, from ferrous sulphate and potassium ferrocyanide, and getting the green by blending yellow and blue. The pigment industry depends on industries which supply the chemicals.

The preparation of the liquid portion of paint is also an occupation for a different cottage—the oil and varnish cottage. Here the boiling and refining of paint oils, polymerisation and oxidation of oils, and the manufacture of varnishes is done. The raw materials required are 1. Drying oils, 2. Gums and Resins, 3. Turpentine and other solvents, 4. Driers 5. Synthetic preparations (resins). Each raw material can be produced in a different cottage. Any attempt to organise paint manufacture on cottage lines should take into consideration its peculiar position and requirements. The preparation of many of these can be done in a cottage. But such attempt will be too much for a unit and the coordination of paint-making and painting will suffer.

When cottage industries are planned on a countrywide basis the most efficient way is to separate each industry and entrust to a single unit. The finished product of one cottage in the series should be utilised automatically by the next industry in the series. But unless there is an efficient coordinating and directing centre chaos will result. This is best achieved by a central controlling organisation. No doubt the state is best fitted to organise such a centre. But when state is not interested in the attempt, individual units should contribute a percentage of their business proceeds for running the central organisation and equipping the central research laboratories. In such a net work each unit will function like a member of a joint family with the central organisation playing the role of the family head. Each member works independently in his line but works in cooperation with others to the benefit of the family in general. The functions of the central organisation will be:

1. To conduct research for improving existing processes.
2. To strive to adopt to cottage manufacture the preparation of raw materials required for the cottage network.

3. To coordinate the efforts of individual units and see that there is no overlapping and conflict of interests.
4. To arrange for raw material sources and help in the distribution of finished products.
5. To run such industries which are not suited to cottages to meet the requirements of the cottage-network.
6. To run an instruction centre where workers in individual cottages will be given a theoretical grounding in the industry in which they are engaged.
7. To maintain a standard in the products turned out at various cottages according to local requirements.

Thus the whole organisation will be decentralisation from within and centralisation from without.

So far we have seen the outlines of a decentralised network in relation to paint. Now let us turn our attention to its economic work ability in contrast. The first consideration is about distribution:

In all centralised industries products are manufactured at one place, irrespective of local demand, and distributed over wide areas. The material cost is almost doubled during this process. Thus a rupee worth of material, costs the consumer two rupees and sometimes even more. In the case of cottage industries the production and distribution are confined to limited areas and distribution costs are almost brought to a negligible fraction. This is one of the advantages of decentralisation. The initial advantage of low production costs by efficient mechanisation is more than offset by the distribution costs in centralised industries.

In the matter of advertisement the cottage industries have a natural advantage. The cottage industries are popularised by inexpensive personal contact in the locality. The advertisement here is the display of the qualities and workmanship to the consumers direct. This is done while the cottage worker works and earns. For centralised industries it is a spending proposition. Even then it has no direct appeal to the consumer. It is indirect and expensive.

In the matter of packing the cottage has another advantage. The paint tins are a necessary waste for which the consumer is charged. Since the material should go to distant places it needs a sound packing. Again for the package to be attractive more has to be spent on it. This packing is over 15% of the material packed in it. You may be surprised to know that the pound tin packing of the bazar quality varnish paint, costs over two annas. The cost of the tin and contents is only five annas. The tin is useless after the paint is used. This wastage of $\frac{2}{3}$ is due to centralisation. For the cottage worker with direct to consumer methods the packing is negligible. He makes the paint and applies it. The container is brought back and re-used many times before it wears out.

In the matter of general utility the cottage industry has no equal. In the paint industry the ultimate consumer has to pay much more than the cost of paint. At present there is the painter to apply the paint. The painting cost is at least equal to paint cost. The painter with no interest in the paint quality does not hesitate to use an inferior quality to ensure his proper wage in the work. The present centralised manufacturer has neither time nor interest to see that proper qualities are used. The cottage worker moves in the locality where his paints are used. Since he gets work in his locality by intrinsic worth of his qualities and not by outward show and attractive packing he is very much concerned with the use of the right material at the right place. As such he keeps an eye on the way in which his products are used. He promptly detects any misuse and advises the consumer about the right use.

Taking all the above things into consideration it will be seen that paint industry should be decentralised to be of real service to the country at large.

The Editor will be glad to receive articles of a practical nature, preferably accompanied with illustrations, on topics covered by this journal.

SOME OBSERVATIONS ON COLOUR

(Reproduced from *The Decorator* of November, 1940.)

It is generally accepted that good colourists are born and not made and that the natural eye for colour, like the natural ear for music cannot be acquired.

The Possession of this faculty however is not in itself sufficient to make a colourist, for there are certain rules which cannot be broken without risk. This point is emphasised in an article by Mark Stirling recently published in *The Decorative Finisher*.

Even in such a simple matter as a Scheme for a room the writer points out that the best schemes are based on the presence, either obviously, or subtly of three primaries. A green room, he says—green is yellow plus blue—is aesthetically agreeable if it possesses a red accent note. A monochrome room has no accent. However pleasing it may be at first it will eventually become monotonous and tiring.

Proceeding the writer says, light colours are those colours that reflect the most amount of light. It is important to know which are the light colours and which the dark so that we can brighten up dark rooms and conversely darken too bright rooms when the need arises. Offhand most of us will say that white is the lightest "colour" we have since white reflects everything. But this is not true. Our lightest colour is lemon-yellow. The explanation of this is simple. A white surface reflects every thing. That is, it reflects not only the blues, reds and purples that are in the white-light itself, but also the blues, reds and purples etc. which are generally present in the surrounding environment to some degree. Therefore the white surface reflects dark tones at the same time that it is reflecting light tones, and the one set tends to counter act the other. On the other hand lemon-yellow reflects only lemon-yellow and absorbs all other hues. The actual figures show that lemon-yellow reflects approximately 70 per cent of the light falling upon it.

Here is an experiment which, with a little white and yellow paint you may try to prove that yellow reflects more light than white. Paint a

SOME OBSERVATIONS ON COLOUR

lemon-yellow pole on a medium grey canvas and high light one side with white to represent the reflection on light. Then stand back a few feet and observe the pole. Instead of the white side being the high lighted side, the lemon-yellow side will appear the lighter, and the white side will look as if it were in shadow. Orange reflects only about one-third of the light that falls upon it while green reflects a little less than 25 per cent. Cerulean blue (Deep blue) reflects only 11 per cent of the light falling upon it, and is consequently a rather dark colour.

Knowing that lemon yellow reflects so much light, we can use lemon-yellow to light up dark halls, and passage ways, and also to give brightness to small closets. Good colour schemes do not come about by chance. They are the result of hard work and careful planning.

We have stated that the eye is pleased when all colours appear at least to some extent in the same scheme. But by this we do not mean that it is necessary to use all the primary colours in clear pure character. In the Orient—in all warm countries—where the sun blazes down with unremitting strength, this may be done with pleasing effect. But strong pure colours are only necessary in these countries only to maintain proper balance with the stronglight. Soft decorative colours will be out of place since the glare would "kill" them completely.

That is why Oriental rugs have such bright colouring. And also why they must be washed and subdued for use in countries where the sunlight is not so strong and all pervading. If a colour scheme is started in tints it must be finished in tints without the introduction of any stronger, brighter colours. If, on the other hand it is done in pure colours, the introduction of tints will "kill" it since the tints will look like weak spots in a strong structure.

Colours that are blood relations are in harmony and may be used without discord. (Blood related colours are colours which have some of the same colour in their mixtures.) Thus orange and green will make a successful visual combination because orange, composed of yellow and red, is related to green, which is composed of yellow and blue—the yellow in each colour marking it a "blood relation" to the other colour. For the same reason green and purple are in harmony, and orange and purple are in harmony.

SOME OBSERVATIONS ON COLOUR

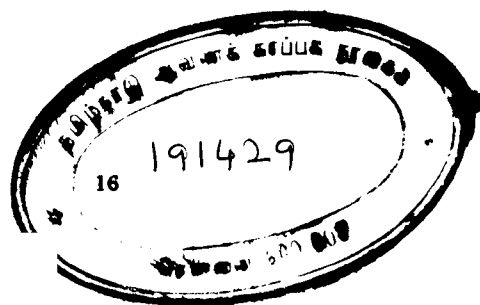
Colours that have no "blood relation" those which do not have a common link are in contrast. Thus red and yellow are in contrast, and so are yellow and blue and red and blue.

When colours are directly related to each other the harmony is more pleasing and more visually satisfying. Painters recognise this almost instinctively and when two colours come together they mix just a trace of one colour into the other. Thus **Relate colours to each other** in painting a red rose with a green stem they will mix a trace of the green into the red, and just a trace of the red into the green. The rose therefore will be related to the green because it will have a little of the green in its own colour and the green will be related to the red because of the slight amount of red that has been mixed into it. Decorators may take a hint from this "trick of the painter" by contriving to "mix" into one area of a room some of the prevailing colour of the area that is adjacent to it and *vice versa*.

It is generally safe and easy to use colours together that are in colour harmony with each other. It is however hard to use colours that have no relation one with the other, and which are in direct contrast. It is here that experience is necessary, for unless one has followed out the trial and error system (and has a natural eye for colour) the laws of the scientist are not going to stand for very much.

In any colour scheme, one colour should dominate all the others if an aesthetically pleasing result is to be achieved. That is a room must not be divided half Orange and half green, or half green and half purple. One of the colours must dominate with the other colour introduced only to please and satisfy the eye. This law of dominance holds true no matter how many colours are used. **One colour should always dominate**

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JANUARY, 1941

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