Dictionary of Painting and Decorating

J. H. Goodier

Third edition

CHARLES GRIFFIN & COMPANY LIMITED, London

Dictionary of Painting and Decorating

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A detailed reference work for craftsman, student and teacher

J. H. GOODIER

Justice of the Peace · Holder of the Queen's Silver Jubilee Medal · Holder of the City and Guilds Insignia Award in Technology · Fellow of the Royal Society of Arts · Fellow of the British Institute of Interior Design

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Preface

Why should anyone write books about trade subjects? To me, the answer lies in the words of Francis Bacon—"I hold every man a debtor to his profession". I certainly owe a tremendous debt to my profession as a painter and decorator. It has given me a long working life packed with interest, satisfaction and enjoyment. It has enabled me to pursue this, the most diverse and fascinating of all the crafts. It has given me the means of doing a creative job with so many facets that no two days have ever been alike. It has brought me into contact with some admirable people, and some of the most perfect gentlemen imaginable. How else can I repay that debt but by providing the means of helping a new generation of painters?

My own studies were helped by books written by great technical authors of former days, especially those of the incomparable James Lawrance and that splendid character John Parry. It was natural that I should want to take up the task where they laid it down. That is what makes for continuity. In the same way, I rejoice to continue the work done by the great craft teachers I have known in the past. But my vision is of the future, not the past. One of my great personal joys is to see how many of my own students have carved out for themselves a useful and satisfying career, here in Britain and all over the world. Many of them regularly correspond with me and are firm friends. Several have achieved positions of great eminence, and that is as it should be; it would be foolish of any teacher to imagine he is on a pinnacle that nobody else can reach—every teacher worth his salt hopes that his students will go further than he himself has done. Many of my students are themselves passing on their own expertise to the rising generations, and that is how knowledge is constantly extending and expanding.

In writing this book, as with everything else I have written, I have had one clear aim from which I would not be deflected. That aim is to provide a full and comprehensive coverage of the subject and to put it into a readable and understandable form without ever sacrificing accuracy. I do not subscribe to an educational system of cutting a syllabus down to bare essentials and giving the absolute minimum of information that is just enough to enable a student to get by. I believe in raising standards, not lowering them. I am opposed to any form of technical writing that merely states the facts without giving an explanation of their underlying principles. The only form of knowledge that is of real value is the kind that is based on understanding. Of course, it is very much easier and quicker to present a subject as a series of formulae to be memorized by the student, but I discovered the fallacy of that system a very long time ago while I was still a schoolboy. I was fortunate in having many masters who loved their subjects and taught them well, but the exception was a highly qualified man whose subject was chemistry; his method was to provide in each lesson twenty chemical equations to be learned by rote without ever explaining the nature of the chemical reactions involved. I now know that he was a brilliant scientist, but he was also the worst teacher

I have ever known, who succeeded in killing any interest the students might have had in the subject. It is possible to reduce painting technology to a formula, listing various types of surface and giving a brief phrase by each to indicate the preparation, type of primer, and so on. There are two snags; one is that memory is fallible and if you get the formula wrong you can easily make a mistake that is very expensive to rectify; the other is that the formula is of no help to you when you're faced with unusual circumstances or problematical surface conditions. There is no substitute for the ability to think the matter out in a logical manner—for which a range of background knowledge is required.

I also have a profound mistrust of the slick jargon phrases that are so popular today. Jargon is lazy speech that obscures the truth. People use jargon because it enables them to sound knowledgeable without taking the trouble to make an accurate and carefully considered assessment of a situation. My desire is to see that painters and decorators are thoroughly competent in their craft and sufficiently well informed about it to command the respect of their customers and clients and the community as a whole.

We live in difficult times. In the preface to earlier editions of this book I said that painters now have less time to master the intricacies of their craft due to a drastic reduction in the period of apprenticeship and the fact that basic training is limited to the mere elements of the work. This is even more true today, and is compounded by massive unemployment which has degraded the whole concept of manual work. As painters we find ourselves in competition with people made redundant from all sorts of industries and with no training in our craft, who offer their services to the public as painters and decorators and who by the execrable quality of their work give the whole craft a bad name. Much of the output of decorative materials is deliberately aimed at the amateur market rather than the professional painter, requiring the minimum amount of skill in application but inevitably sacrificing quality. On contract work, in nearly every case the painting is regarded by the specifying authorities and the finance departments as the least important factor; the emphasis is on highly expensive eye-catching constructional devices, and the painting accounts for less than 2 percent of the contract price, consisting generally of cheap white emulsion paint on the ceiling and wall areas and a totally inadequate paint system on the woodwork and metalwork. Couple this with some ill-judged youth training schemes and you have the perfect recipe for reducing the painting craft to the level of a semi-skilled or an unskilled occupation.

As professionals we have the remedy in our own hands. It does not lie in skimping work nor in cutting costs; by those methods we shall destroy our own livelihood because our work will be no better than that of the amateur—in fact it will be worse, because the amateur can afford to spend a lot more time on the work since no labour costs are involved. The remedy lies in promoting the highest possible standards of workmanship, because then the superior quality of the professional's work is obvious for everyone to see and is clearly such that no amateur can hope to achieve. The decorating craft has a far greater variety of techniques and materials than any other craft, and that is what we should exploit. Our opportunity lies in advertising and selling our expertise and thereby making the public aware of the endless possibilities we can offer. In innumerable ways experience shows that when highly attractive

things are available the public is prepared to pay a high price for them, and good quality creates its own demand.

This is not some rosy dream. We have risen above difficult times before now. Unemployment in the late 1920's and 1930's was on a disastrous scale, living conditions were poor, and salary levels and spending on luxury goods were minimal compared with today, yet there was a constant demand for high-class decorating work. The purpose of this book lies in my conviction that the success of the painting and decorating craft depends on the quality of the work it produces and the ability of its practitioners. The key to all this is knowledge—knowledge of the techniques, the materials and the new developments, based on real understanding. This book aims to supply that knowledge and understanding.

Newcastle under Lyme
May 1986

J. H. GOODIER

Acknowledgments

Writing a book is a long and lonely task, working in solitude, isolated from other people, but it is cheered and enlivened by the friendliness one encounters when one looks for advice to someone who can throw extra light on some specialist subject or new development.

I want to thank the following firms, and in particular the individual people in those firms, who have been so kind and have gone out of their way to provide information on various specialized topics.

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And above all my wife, without whose continual help and tremendous patience I should never have been able to achieve anything.

To my very dear EDITH, with my unending gratitude

CONVERSION FACTORS

To convert	Multiply by
Inches into millimetres	25.4
Millimetres into inches	0.039
Feet into metres	0.305
Metres into feet	3.281
Yards into metres	0.914
Metres into yards	1.094
Miles into kilometres	1.609
Kilometres into miles	0.621
Square inches into square feet	0.007
Square feet into square inches	144
Square inches into square centimetres	6.452
Square centimetres into square inches	0.155
Square feet into square metres	0.093
Square metres into square feet	10.764
Square yards into square metres	0.836
Square metres into square yards	1.196
Cubic inches into cubic feet	0.0006
Cubic feet into cubic inches	1728
Cubic inches into cubic centimetres	16.387
Cubic centimetres into cubic inches	0.061
Cubic yards into cubic metres	0.765
Cubic metres into cubic yards	1.308
Cubic feet into gallons	6.235
Gallons into cubic feet	0.160
Cubic inches into gallons	0.004
Gallons into cubic inches	277
Cubic feet into litres	28.32
Litres into cubic feet	0.035
Cubic centimetres into pints	0.0018
Pints into cubic centimetres	567.936
Pints into litres	0.568
Litres into pints	1.760
Gallons into litres	4.544
Litres into gallons	0.220
Ounces into grams	28.349
Grams into ounces	0.035
Pounds into kilograms	0.454
Kilograms into pounds	2.205
Tons into kilograms	1016
Kilograms into tons	0.00098
Tons into tonnes (i.e. metric tons)	1.016
Tonnes into tons	0.984
Pounds per square inch into bars	0.069
Bars into pounds per square inch	14.504

CONVERSION TABLE

Feet and inches into metres, centimetres, millimetres, and vice versa

For centimetres move point two to right For millimetres move point three to right

	inches											
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
feet	**metres**											
0	—	0.025	0.051	0.076	0.102	0.127	0.152	0.178	0.203	0.229	0.254	0.279
1	0.305	0.330	0.356	0.381	0.406	0.432	0.457	0.483	0.508	0.533	0.559	0.584
2	0.610	0.635	0.660	0.686	0.711	0.737	0.762	0.787	0.813	0.838	0.864	0.889
3	0.914	0.940	0.965	0.991	1.016	1.041	1.067	1.092	1.118	1.143	1.169	1.194
4	1.219	1.245	1.270	1.295	1.321	1.346	1.372	1.397	1.422	1.448	1.473	1.499
5	1.524	1.549	1.575	1.600	1.626	1.651	1.676	1.702	1.727	1.753	1.778	1.803
6	1.829	1.854	1.880	1.905	1.930	1.956	1.981	2.007	2.032	2.057	2.083	2.108
7	2.134	2.159	2.184	2.210	2.235	2.261	2.286	2.311	2.337	2.362	2.388	2.413
8	2.438	2.464	2.489	2.515	2.540	2.565	2.591	2.616	2.642	2.667	2.692	2.718
9	2.743	2.769	2.794	2.819	2.845	2.870	2.896	2.921	2.946	2.972	2.997	3.023
10	3.048	3.073	3.099	3.124	3.150	3.175	3.200	3.226	3.251	3.277	3.302	3.327
11	3.353	3.378	3.404	3.429	3.454	3.480	3.505	3.531	3.556	3.581	3.607	3.632
12	3.658	3.683	3.708	3.734	3.759	3.785	3.810	3.835	3.861	3.886	3.912	3.937
13	3.962	3.988	4.013	4.039	4.064	4.089	4.115	4.140	4.166	4.191	4.216	4.242
14	4.267	4.293	4.318	4.343	4.369	4.394	4.420	4.445	4.470	4.496	4.521	4.547
15	4.572	4.597	4.623	4.648	4.674	4.699	4.724	4.750	4.775	4.801	4.826	4.851
16	4.877	4.902	4.928	4.953	4.978	5.004	5.029	5.055	5.080	5.105	5.131	5.156
17	5.182	5.207	5.232	5.258	5.283	5.309	5.334	5.359	5.385	5.410	5.436	5.461
18	5.486	5.512	5.537	5.563	5.588	5.613	5.639	5.664	5.690	5.715	5.740	5.766
19	5.791	5.817	5.842	5.867	5.893	5.918	5.944	5.969	5.994	6.020	6.045	6.071
20	6.096	6.121	6.147	6.172	6.198	6.223	6.248	6.274	6.299	6.325	6.350	6.375
21	6.401	6.426	6.452	6.477	6.502	6.528	6.553	6.579	6.604	6.629	6.655	6.680
22	6.706	6.731	6.756	6.782	6.807	6.833	6.858	6.883	6.909	6.934	6.960	6.985
23	7.010	7.036	7.061	7.087	7.112	7.137	7.163	7.188	7.214	7.239	7.264	7.290
24	7.315	7.341	7.366	7.391	7.417	7.442	7.468	7.493	7.518	7.544	7.569	7.595

A

The letters "(NLC)" following an entry signify a material or procedure that is no longer in current use, but which may sometimes be specified to meet a particular need, e.g. in restoring an old or historic building.

Abrade A word which means to rub away or wear down by friction. Abrasion is the act of rubbing away or wearing down, and from this is derived the word "abrasive".

Abrasive In painting and decorating the term has two connotations.

(i) A material which, by a process of rubbing down or grinding down, tends to make a surface become smooth, and very often at the same time imparts some degree of "tooth" which improves the adhesion of paint to the surface. Such materials are of the utmost importance to the decorator, because it is most essential that every surface should be adequately and correctly prepared if a good finish is to be obtained.

The abrasives used by the painter include such materials as abrasive papers, emery cloth, pumice stone, pumice blocks, steel wool, etc. Some of the older traditional abrasives such as rotten stone, cuttlefish bone, etc., although obsolete in general practice, are still occasionally used for certain specific types of work.

(ii) In industrial painting the term "abrasive" is used to refer to the various types of grit or shot employed in the process of blast-cleaning, "shot" being used to describe small, rounded abrasive particles, and "grit" referring to small angular particles with a sharp cutting edge.

The types of abrasive which are used include ferrous metallic substances such as chilled iron shot or grit, and steel or malleable iron shot or grit; various non-ferrous metallic substances such as aluminium, brass or copper, and non-metallic substances such as sand (which needs to be carefully controlled because of the health hazards involved). On site work, where it is not feasible to reclaim or recycle the abrasive, cost becomes a highly significant factor, and an abrasive called "mineral slag" is often used because it is cheap enough to be regarded as expendable; mineral slag is produced in the course of refining iron or copper.

Abrasive papers These include garnet paper; glass paper and sandpaper for dry rubbing down; waterproof abrasive papers of various kinds which are generally made from silicon carbide and are used for wet rubbing down; self-lubricating papers made from silicon carbide coated with zinc stearate which, because of their convenience, are to some extent replacing waterproof papers in vehicle painting and similar work; and emery paper used for the etching of metal surfaces. In modern practice garnet as an abrasive has largely been superseded by aluminium oxide.

Abrasive papers—how they are graded Abrasive papers (with the exception of sandpaper and emery) are graded by a numerical system which indicates the fineness or coarseness of the grit. The numbers correspond with the size of mesh through which the grit particles will pass; thus, paper graded as 100 indicates that the grit will pass through a mesh with 100 holes per

square inch, the system having been codified before metric measurements were adopted in this country; 400 indicates that the particles will pass through a mesh with 400 holes per square inch, and so on. Some papers are marked on the back with both the grade number *and* the grit number, which may be confusing; in this case it should be noted that the higher grit numbers indicate the coarser grits whereas the higher grade numbers indicate the finer grits. The backing paper is also graded; the finer grades of abrasive particles are bonded to a lightweight flexible paper backing, grade A, to facilitate rubbing down by hand, while the coarser grades of grit are bonded to a heavy rigid backing paper, grade D, which is suited to both hand and mechanical working.

The ordinary "wet-or-dry" abrasive papers used by the decorator are supplied in five grades ranging from 120, the coarsest, to 600, the finest. Self-lubricating abrasive papers which are widely used in vehicle re-finishing are also available in five grades, but these range from 220 to 500. For certain specialist purposes, however, there are very much finer grades of abrasive paper available. The ultimate degree of fineness at the present time is an abrasive paper of grade 1000. This is far too fine (and too expensive) for any normal decorative work, but it is used where the quality of the painted work is absolutely critical. Usually this applies to small areas of the finest pieces of ornamental work, but occasionally it is required on quite large areas. One example of this is the quality of the paintwork on the vessels designed for the highest levels of boat-racing. In order to cut down wind and water resistance to the minimum, every possible means is employed to ensure a completely smooth and nib-free surface, and to achieve this the paintwork is brought to an extraordinary degree of perfection. During the summer of 1983 the USA was so intent on trying to maintain its unbroken sequence of success in the America's Cup that the use of grade 1000 abrasive paper was regarded as part of the regular painting procedure, and great quantities of this particular grade were employed.

The coarser grades of garnet papers, for dry rubbing down, range from 40 to 100, the natural garnet being bonded to a grade D paper; the finer grades range from 130 to 240 on a grade A paper.

Glasspaper and sandpaper used for dry rubbing down are graded on a different system. They are sold in grades ranging from "0" or "00" (very fine) to "No. 3" (coarse). But there is no uniformity, and the significance of the grade numbers varies from one manufacturer to another. Some manufacturers have abandoned numbers and use initial letters instead; the grades are F (fine), M (medium), C (coarse) and S (strong) although the finest grade is sometimes termed "Flour".

An abrasive is now available for the dry rubbing down of rough painted surfaces and new timber which consists of tungsten carbide particles bonded to a thin metal sheet, and this is graded as fine, medium or coarse.

Absorbency The extent to which a surface will absorb or "suck in" a liquid. The absorbency of a surface has a great bearing on the quality of the painter's work, and the object of many of the priming coats and preparatory processes he employs is to reduce or equalize the absorbency. For example, the priming of softwoods and certain forms of plaster is directly intended to reduce their absorbency, because if undercoatings were applied to a highly

absorbent surface the thinner and binding medium would be sucked into the surface, making it impossible to level the paint out quickly enough and therefore leading to "ropiness". In the same way a gloss finish applied to an absorbent surface would lose some of its binding medium and the gloss would be reduced. The absorbency of plaster surfaces is often patchy and variable and one object of applying size before papering is to help to equalize the absorbency. The painter often speaks of highly absorbent surfaces as "hot", and he experiences difficulty in applying paint coatings to them.

Abstract design Anything which is abstract is separated from any particular thing—an idea which exists only in the mind—and abstract design is the formation of pattern which relies for its effect on the interplay of masses, shapes or colours rather than on naturalistic or conventional shapes. It may, of course, be *based* on some natural object or form, but the treatment is such that the basis is often hidden in the interrelation of the shapes.

Accelerated weathering Anything which speeds up or hastens the natural process of decomposition. The paint manufacturers make great use of what are termed "accelerated weathering tests" in which paints which are under review are applied to small panels and placed in a revolving drum where they are subjected alternately to ultra-violet light rays and to soaking with a spray of cold water in constant succession. This imposes a great strain on the paint and the effect of several months' normal outdoor exposure can be reproduced in a few days. Paints do not necessarily behave under such tests exactly as they will under normal conditions, but any paint which gives a good performance under test is shown to have possibilities which are worth further consideration and experiment.

Accelerator A term sometimes used instead of the more precise term "activator" in relation to two-pack products. See *Activator*.

Accelerators in plaster The anhydrous plasters (i.e. anhydrous gypsum plaster—Class C, Keene's and Parian —Class D) have accelerators such as alum or zinc sulphate added during manufacture to speed up their setting, because they do not combine with water very quickly and there is a danger of the water used to mix with them evaporating before the setting action is complete. This leads to a fault known as "dry-out", which may have serious consequences for the decorator. The actual fault may not be observed but if water is introduced during the decoration the plaster may absorb some of it and resume the setting action which was not completed, causing the skimming coat to buckle and flake off. A form of dry-out sometimes caused by impatience on the part of the painter or his customer is dealt with under the letter "D".

Access equipment Any type of ready-made mobile equipment which can be manipulated by the operative craftsman in order to convey him/her to where the working surface is situated. The term covers all the various kinds of cradle, whether they be fixed, travelling or winch-operated, bosun's chairs and skips, and hydraulic or electrically operated platforms and towers. See *Powered access equipment*.

Accident An accident is an unexpected or unplanned happening which results in damage or personal injury and which may have fatal consequences.

But although *all* accidents are unexpected, most of them *could* have been foreseen and could therefore have been prevented. Accidents don't just happen without a definite reason. Accidents have a definite cause, and finding out what causes them is the first step towards preventing them.

Accidents in painting work Every human activity involves some risk, but clearly there are some occupations where very little risk is involved and others where there is a very high degree of risk. Building and civil engineering works are recognized as having a high risk factor, higher than that of most other occupations. But even within this grouping the individual trades vary considerably, and it is an unfortunate fact that the craft of painting and decorating has a very high accident rate indeed compared with that of other building crafts. The main reasons for this are as follows:

(i) The majority of painting firms are very small units serving a fairly restricted local area. There are, however, large numbers of painting firms and the total workforce is very great. It is far more difficult to supervise working conditions and enforce the observance of safety regulations when several hundred workers are operating in small groups scattered over a wide area than when a single firm employs the same number of workers on a single site.

(ii) It is regrettably common for people with no craft background at all to change from some other totally different kind of occupation and set up in business as painters and decorators. Apart from the fact that they bring the whole craft into disrepute, because they are untrained they do not recognize the risks, nor do they understand the elementary rules of craft procedure.

(iii) Most of the individual operations in painting are of very short duration. The time taken to apply a coat of paint to a wall surface is very slight compared with the time taken to erect the structure. So the painting of the structure consists of a number of individual operations each of which is performed quickly, and the painter's work is characterized by a much greater degree of mobility than that of other building trade workers. In addition, a lot of the work consists of painting small unconnected items. It follows that the amount of time required to paint the structure does not justify the cost of erecting an elaborate scaffold, and indeed it would be quite uneconomic to do so. The result is that much of the painter's work is done with impermanent forms of scaffold that can easily be moved from place to place, so that the risk of mishap is much higher than in the case of more lengthy building operations. But the fact that the risks are higher does not mean that the work is inherently more dangerous; it simply means that the risks must be recognized and proper precautions taken to avoid them.

Accident prevention Usually an accident is the last link in a chain of events, the chain consisting of a series of dangerous conditions and dangerous actions, all operating at the same time. In effect, what happens is very similar to the sequence of events which occurs when several dominoes standing on end are arranged so that when the first one is pushed over it causes each of the others to fall over in succession. The fall of the dominoes could be prevented by lifting out one of the dominoes, thus breaking the sequence. In the same way, the chain is broken by removing some of the links; in other words, by

removing the dangerous conditions and cutting out the dangerous actions the sequence of events is interrupted, and the accident cannot happen. This is the basis of accident prevention.

Accident prevention is something that everyone can practise and should practise. It consists of being able to recognize when a condition is becoming dangerous and knowing when an action is unsafe, and knowing also what steps to take to remove the danger. Learning to spot these dangerous conditions and actions is not at all difficult, because accidents follow a regular pattern. The same kind of accident happens over and over again. Every day of the year on thousands of sites all over the country, the same set of dangerous conditions builds up and the same unsafe acts take place.

Accident prevention is not just the concern of the management, it is the concern of everybody engaged in any capacity in the craft, from the most junior to the most senior members of the workforce.

Acetate A compound which may be considered as derived from treating a substance with acetic acid. Those of interest to the painter are the group of slow-evaporating solvents used in the preparation of nitrocellulose lacquers and which include amyl acetate, butyl acetate, ethyl acetate, propyl acetate, etc. When paints were hand-mixed on the site, lead acetate (sugar of lead) was used as a drying agent.

Acetone A strong solvent, water-white in colour, which has several applications to the painting trade. It is an ingredient in some makes of paint remover, and is also used in the preparation of cellulose ester lacquer. The use of acetone to scrub the surface of "greasy" woods such as cedar and teak before they are painted is often recomended.

Acetylene A gas, obtained from calcium carbide and water, which burns with a very white light. It is highly flammable, and in contact with air it produces an explosive mixture. Its important to the painter is its use in various processes such as flame-cleaning and in equipment such as blowtorches. The construction, maintenance and carriage of acetylene cylinders are subject to statutory regulations; the cylinders should be stacked upright on the site.

Acetylene blowtorch A piece of burning-off equipment comprising a cylinder of compressed acetylene gas, a flexible rubber hose and a lightweight metal handpiece with burner attachment and regulator for controlling the proportions of gas and air. The flame can be adjusted from a broad fan to a narrow pencil. It was the first type of blowtorch to be fuelled with bottled gas, but in recent years has largely been superseded by butane and propane blowtorches and other types of burning-off equipment.

Achromatic Free from colour; transmitting light without decomposing it into its three primary colours. To the decorator the term might be used to apply to white and neutral greys.

Acicular A term used to denote the crystalline form of a pigment, indicating that the particles are needle-shaped, giving increased durability and tint retention to certain pigments such as zinc oxide.