Some Painting Problems and the Answers

by F. L. Browne
Senior Chemist, Forest Products Laboratory
Madison, Wisconsin

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f paint is limited to a few
nting must be maintained
more paint from time to
five to six times as much
is required for renewal of
as is consumed in the ini-
of new woodwork. Those
nd sell paint are in the
aking of all these paint
ersale transactions indi-
the jobs that went before
e after them. The house
sure, buys his paint jobs
e, but his real interest is
satisfactorily maintained
period of years. Much of
erstanding and disagree-
aint comes from failure to
tial paint maintenance is a
atter, made up of a suc-
aint jobs that must fit to
harmonious whole

intenance is successful
s up to reasonable expec-
as to continuance of the
tive effect and as to cost
ectations, however, vary
e, following tradition of
g, expect to repaint no
than intervals of eight or
Others, whose decorative
ay be more exacting are
aint every four or five
ligible few may be willing
more often. Practically
ever, experts ever to be
ira expense of completely
t existing before applying
al any maintenance pro-
ails to such eventuality
ded as unsuccessful

above expectations can be
h good house paints now
t. Just no new kind of paint
f satisfying all of them
refore, to attempt to dis-
nt in general terms—we
must discuss it with reference to the
kind of maintenance program for
which it is suitable.

The Cure for Poor Paint

Although the writer has rarely en-
countered really inferior paints in the
cases of paint complaints he has exam-
ined, he is told repeatedly by paint
manufacturers and others that much
inferior paint is made and sold. The
Federal Trade Commission and Better
Business Bureaus take action against
notoriously bad paint from time to
time, but they can deal only with paints
so inferior in quality that their sale is
a downright fraud. Paints that are
merely inferior in quality, but not
clearly fraudulent can be dealt with
effectively only by clearly defining
good paint. When the regional lumber
manufacturers were preparing their
pamphlets on painting instructions
for insertion in bundles of bevel siding
they found that there is only one kind
of good paint defined in such a way
that it can be discussed in general rec-
ommendations. That paint is pure
white lead, commonly known as lead
and oil. Other kinds of good paint are
identified for sale by trade brand only,
vary widely in composition, but con-
form to no standards by means of
which the various kinds and grades
can be recognized by the users.

The Forest Products Laboratory has
recently shown that it is perfectly
practicable to define good paints of all
kinds in such a way that they can be
set apart from inferior paints. In fact,
it is technically feasible to classify
paints in a logical manner. The pro-
posed "grading" rules, though tech-
nical in nature, are much simpler than
the various grading rules for lumber.
While some technologists of the paint
industry recognize the desirability of
classifying paints, the paint industry
has not adopted it.

"Moisture" Failures and Their Cure

Access of moisture behind painted
woodwork is the cause of one large
class of early paint failures. The mois-
ture may get in through carelessly de-
signed or erected joints in the construc-
tion, or by condensation of moisture
laden air from inside of the house
when it comes in contact with the cold
back surfaces of the exterior wood-
work. Trouble from condensation has
probably increased materially in re-
cent years because of the greater use
of thermal insulation, which makes the
back surfaces of exterior woodwork
colder by letting heat escape from in-
side, and because of provision of air
washing and humidification in modern
heating plants. Condensation of this
kind is more troublesome in the north-
ern parts of the country, but in more
southern areas where studs are some-
times covered with drop siding without
sheathing and heating is accomplished
with inadequately vented open gas
burners, condensation on or in the
sidewalls or under the roof sometimes
occurs as a result of the large amounts
of moisture formed in the combustion
of gas.

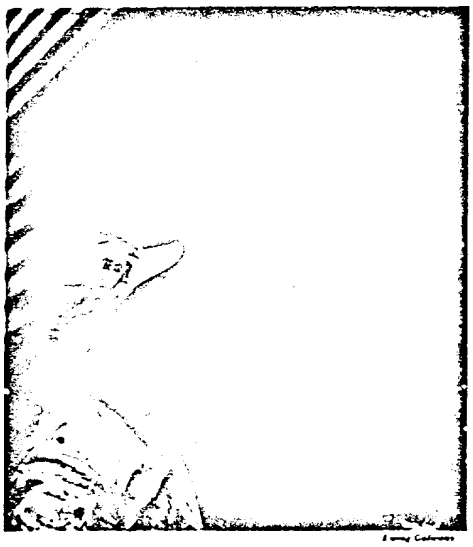
Condensation in sidewalls and attics
can be prevented by keeping moisture
from passing through the walls. This
can be accomplished by the correct in-
stallation of vapor barriers on the *in-
side* of the studs and *underside* of attic
floor joists. In houses already erected
two coats of aluminum paint on the
interior surfaces of the walls and ceil-
ings under the attic make an effective
vapor barrier over which other wall
decoration may be applied. Where
moisture arises from open gas burners
it should be carried off by means of
adequate flues.

Much moisture is evaporated in
houses during normal living operations
such as cooking, bathing, laundry
work, and the breathing of persons and
plants. Families undoubtedly vary in
their living habits that affect the
amount of moisture evaporated and
the amount that can subsequently es-
cape when the house is ventilated by
opening windows. House owners
should be taught that condensation on
windows is an indication that the rela-
tive humidity indoors is higher than
the house can carry safely with the
prevailing temperature out of doors
and that reduction of relative humid-
ity by opening windows and adjust-
ment of the heating plant is desirable
until the condensation is re-evaporated.
In northern climates storm windows
are necessary, whether or not the win-
dows are weatherstripped, both to save
heating expense and to prevent con-
densation without limiting the house to
unreasonably low relative humidity
during cold weather.

Fortunately the problems of mois-
ture leakage and condensation are be-
coming generally appreciated and at
least for new houses and some of those
already erected, we now have effective
means of keeping the woodwork dry.
To be sure there remains the arduous
undertaking of educating those con-
cerned with the erection of houses and
the house owners themselves, but there
are reasonable grounds for believing
that in time moisture as a large cause
of unsuccessful paint maintenance can
be eliminated.

The Cure for Mistakes in Applying Paint

Much unsuccessful painting comes
from faulty technique in applying
paint. The most common blunders
arise from the painter's very human
desire to do the work with the smallest
amount of expensive material possible.
In some cases in which the limits of
safety are overdesigned the painter was
not intentionally dishonest, he was
merely mistaken in his judgment or
unfamiliar with the limitations of the
material with which he was working.
It should be remembered that the
painter's judgment is necessarily based
on insufficient information because,
except in the case of lead and oil, he
does not have practical knowledge of
the composition of the paint he is
using, and there are no generally ac-
cepted standards of correct applica-



Lenny Gutterman

● If the paint job (particularly the repaint job) goes wrong, don't blame it all on the painter. "More complaints about paint jobs are caused by homeowner programs of maintenance than by poor lumber, poor paint, bad application, or moisture." The main thing is a sensible program of maintenance

tion. Commercial paints differ in com-
position far too widely to conform to
any general standards of application,
and since they are not recognized by
classes, each paint presents a separate
problem in application. Often the
painter is asked to apply a paint that
came on the market long after he
learned his craft and differs seriously
as respects application from anything
he has been trained to use correctly.

To be sure, directions for application
are usually printed on the label on
paint containers. The painter is often
chided for paying little attention to
such directions, but when manufac-
turers' directions are studied carefully
in relation to the composition of their
products it becomes clear at once that
manufacturers' ideas of correct appli-
cation are just as divergent and illog-
ical as painters' practices.

The Cure for Mistakes in Paint Maintenance

In the writer's experience most
complaints about paint jobs are caused
by incorrect programs of maintenance
than by poor lumber, poor paint, bad
application, or moisture. Neither the
paint manufacturer nor the painter,
as a rule, has much control over main-
tenance, because the house owner (or
his agent) generally decides when
painting shall be done, how much work
he is willing to pay for, and often what
brand of paint shall be used. Efforts
to attain more successful paint main-
tenance, therefore, must take into ac-
count the necessity of teaching house
owners how to space jobs correctly and
how to choose the right kinds of paints
for their purposes.

Many house owners have no definite
plan for spacing paint jobs, and merely
wait until the old coating gives in pieces
before trying to renew it. In this group
many have no intention of painting
more often than every eight or ten
years. Since we have no white paints
that can be relied upon to remain dur-
able for such long periods, those who
follow such programs are more inter-

ested in the ability of the paint to stand neglect well than they are in its durability. They want a soft type of paint that breaks up slowly by crumbling so that it does not look too unkempt during the period of neglect and after neglect can be safely repainted without expensive removal of the old coating. Pure white lead paint, if used exclusively, will behave in this way, and is largely responsible for the fact that so many owners are accustomed to maintenance programs involving long periods of neglect.

MOST of the newer paints, however, are made to provide greater durability and superior appearance, which can be provided only by making harder paints that break up finally by cracking, curling, and flaking, and therefore cannot be neglected safely. Of course, practically all paints are advertised as wearing away slowly by chalking, leaving a fine surface for repainting, and avoiding the defects of cracking and scaling, but such claims are made on the assumption that repainting will be done before the end of the period of durability and before neglect begins; they do not mean that the paint is suitable for those who expect to let their coatings go through periods of neglect.

There are two ways of successfully linking together the maintenance program and the kind of paint for those with unduly long intervals between painting. One way is to convince the house owner that it will be worth his while to change his program to permit him to use paints of harder type satisfactorily. The other way is to sell him the kind of paint that will serve satisfactorily in the program to which he is accustomed. To persuade him to buy a paint unsuited to the program he intends to follow, however, is simply to add one more to the number of those who are dissatisfied.

A large proportion of paint complaints that come to the writer's attention occur on houses that have been painted at reasonable intervals with good paints well applied on woodwork that remains dry and yet the paint fails far too soon and often in a manner not characteristic of the normal behavior of the paint last used. In all these cases, however, two or more paints of distinctly different composition have been used for successive paint jobs or successive coats in the same paint job. Some of the combinations show up repeatedly in different complaints. Some well known combinations frequently occurring in complaints are white paints over yellow ochre primer or paint, almost any house paint over clear varnish, and white paints over full color paints like deep red, brown, green, or black. Unfortunately technical exposure tests in the past have been confined chiefly to initial paint jobs or repainting with the same kind of paint, but some past records of tests involving combinations of paints differing in type have been discovered, the outcome of which reveals the same abnormalities of behavior found when these combinations of paints are seen on houses.

The evidence that good paints are not all compatible with one another is now conclusive, but there is much difference of opinion about the seriousness of the problem. Some hold that incompatibility occurs only in a few extreme cases such as those named in the preceding paragraph. The writer believes, on the basis of both observations of houses and of technical exposure tests, that the principle of incompatibility is very much more far reaching. Combinations of white paints, differing materially in content of zinc oxide, for example, have been observed to deteriorate more rapidly and in a less satisfactory manner than corresponding coats made up entirely of either one of the paints separately. A great deal of research will be necessary to establish all of the ramifications of the principle of compatibility, but when it has been done many of the present mysteries of house paint maintenance will be cleared up. A large proportion of the Forest Products Laboratory's research on painting is now directed toward this problem.

Until future technical study discloses the extent to which paints may differ in composition and still remain compatible, the conservative practice in maintenance is to start out with a good paint when the woodwork is new and thereafter maintain it at proper intervals with paint of essentially the same composition. Switching from one kind of paint to another is doubtful practice unless the particular combination so purchased has been tested or found satisfactory by previous experience. Certainly those combinations of paints that have frequently led to difficulty should be avoided. At the present time the only white paint that is used consistently by large numbers of house owners is pure white lead because it is the only paint recognized by type as well as by manufacturer's brand. In the writer's opinion the high regard in which white lead paint is held by so many good painters and paint users is due largely to this consistency in its use. When white lead is applied over paints of other kinds it often fails prematurely and in an abnormal manner, indicating that it is just as subject to the requirement of compatibility with previous paints as are paints of other kinds.

The Need of Classification of Paints

The cure for bad programs of paint maintenance, therefore, lies in a classification of paints that will make it possible to teach house owners how to buy the right kinds of good paint for their purposes and how to get out of the paints they buy the good service of which they are capable.

Consideration of the causes of unsuccessful paint maintenance and consequent loss of public confidence in painted exterior woodwork shows that our most serious troubles have come not so much from jerry building and inferior paint as from efforts to improve building methods and paints that have made the situation more complicated and unduly technical for craftsmen and laymen. Thermal insulation and modern heating plants are distinct improvements over past practices but, unless appropriate precautions are taken to control condensation on cold parts of the structure, they tend to increase the number of houses in which moisture leads to early paint failures and other difficulties. In a similar way modern developments in paint have given us better paints than we ever had before, but there are now so many kinds of good paint on the market and they vary so much in composition, manner of correct application, and compatibility with one another that painters and house owners do not know how to use them all correctly. Merely offering the public good paints that are capable of giving successful service is not enough to re-establish confidence in painted woodwork unless we likewise make it possible for each good paint to be so applied and maintained that it will give the good service of which it is capable. To accomplish that purpose the technical considerations of application and maintenance must be simplified sufficiently to bring them within the comprehension of craftsmen and house owners.