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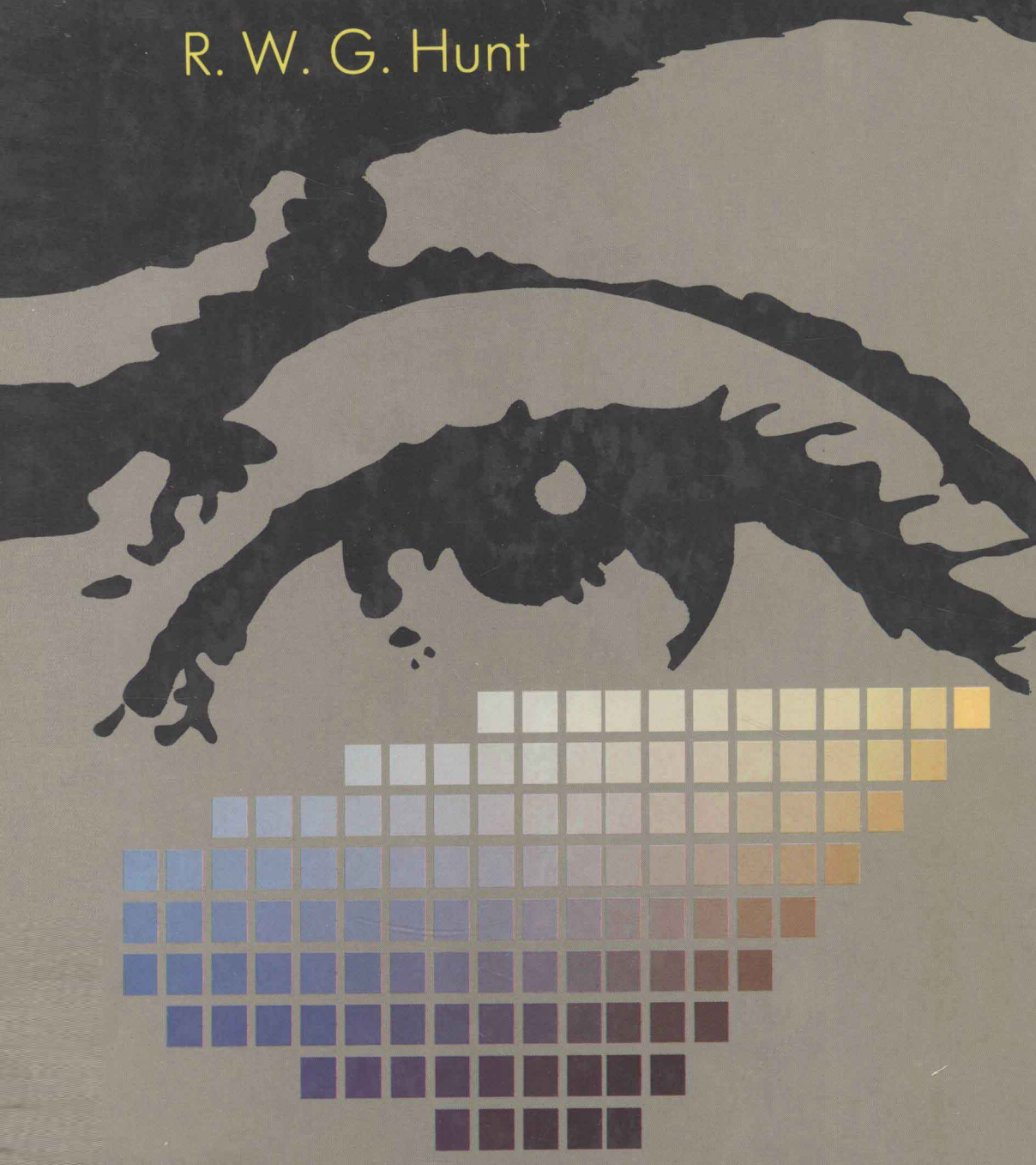
APPLIED SCIENCE AND INDUSTRIAL TECHNOLOGY

MEASURING COLOUR

R. W. G. Hunt



MEASURING COLOUR

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Prologue

This is the story of Mister Chrome
who started out to paint his home.
The paint ran out when half way through
so to the store he quickly flew
to buy some more of matching hue,
a delicate shade of egg-shell blue.
But when he tried this latest batch,
he found it simply didn't match.
No wonder he was in a fix,
for of the colours we can mix,
the major shades and those between,
ten milllion different can be seen.

You foolish man, said Missis Chrome,
you should have taken from the home
a sample of the colour done;
you can't remember every one.
Taking care that she had got
a sample from the early pot,
she went and bought her husband more
of better colour from the store.
Before she paid, she checked the shade,
and found a perfect match it made.
In triumph now she took it home,
and gave it straight to Mister Chrome.
He put it on without delay,
and found the colour now okay.

But, after dark, in tungsten light,
they found the colour still not right.
So to the store they both went now,
with samples clear, and asked them how
a paint that matched in daylight bright
could fail to match in tungsten light.
The man's reply to their complaint
was that the pigments in the paint
had beeen exchanged, since they had bought,
for others of a different sort.
To solve the problem on their wall,
he gave them paint to do it all
from just one batch of constant shade,
and then at last success was made.

To compensate them for their trouble,
the store sent to them curtains double.
They hung them up with great delight;
they matched in tungsten and daylight.
A neighbour then did make a call
and fixed his eye upon the wall;
the paint, he said was all one colour,
but clearly saw the curtains duller!

Though colours strange at times appear,
the moral of this tale is clear:
to understand just what we see,
object, light, and eye, all three,
must colour all our thinking through
of chromic problems, old or new!

Contents

Preface

This book is intended to provide the reader with the basic facts needed to measure colour. It is a book about principles, rather then a guide to instruments. With the continual advances in technology, instruments are being improved all the time, so that any description of particular colorimeters or spectrophotometers is likely to become out of date very quickly. For such information, manufacturers' catalogues are a better source of information than books. But the principles of measuring colour are not subject to rapid change, and are therefore appropriate for treatment in the more permanent format offered by books.

Recommendations about the precise way in which the basic principles of colour measurement should be applied have for over 50 years been the province of the International Commission on Illumination (CIE). The second edition of its Publication No. 15, *Colorimetry*, made available in 1986, includes several new practices, and it is therefore timely to restate the principles of colorimetry together with these latest international recommendations on their application; this is the aim of *Measuring Colour*.

Colour is, of course, primarily a sensation experienced by the individual. For this reason, the material has been set in the context of the colour vision properties of the human observer: the first chapter is a review of our current knowledge of colour vision; and the last chapter provides a description of a model of colour vision that can be used to extend colour measurement, beyond the territory covered by the CIE at present, to the field of colour appearance.

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