

**MECHANICAL INDUSTRIES
EXPLAINED, SHOWING
HOW MANY USEFUL ARTS
ARE PRACTISED**

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Mechanical Industries Explained, Showing How Many Useful Arts Are Practised by
Alexander Watt

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EXPLAINED

*SHOWING HOW MANY USEFUL ARTS ARE
PRACTISED*

WITH ILLUSTRATIONS

BY

ALEXANDER WATT

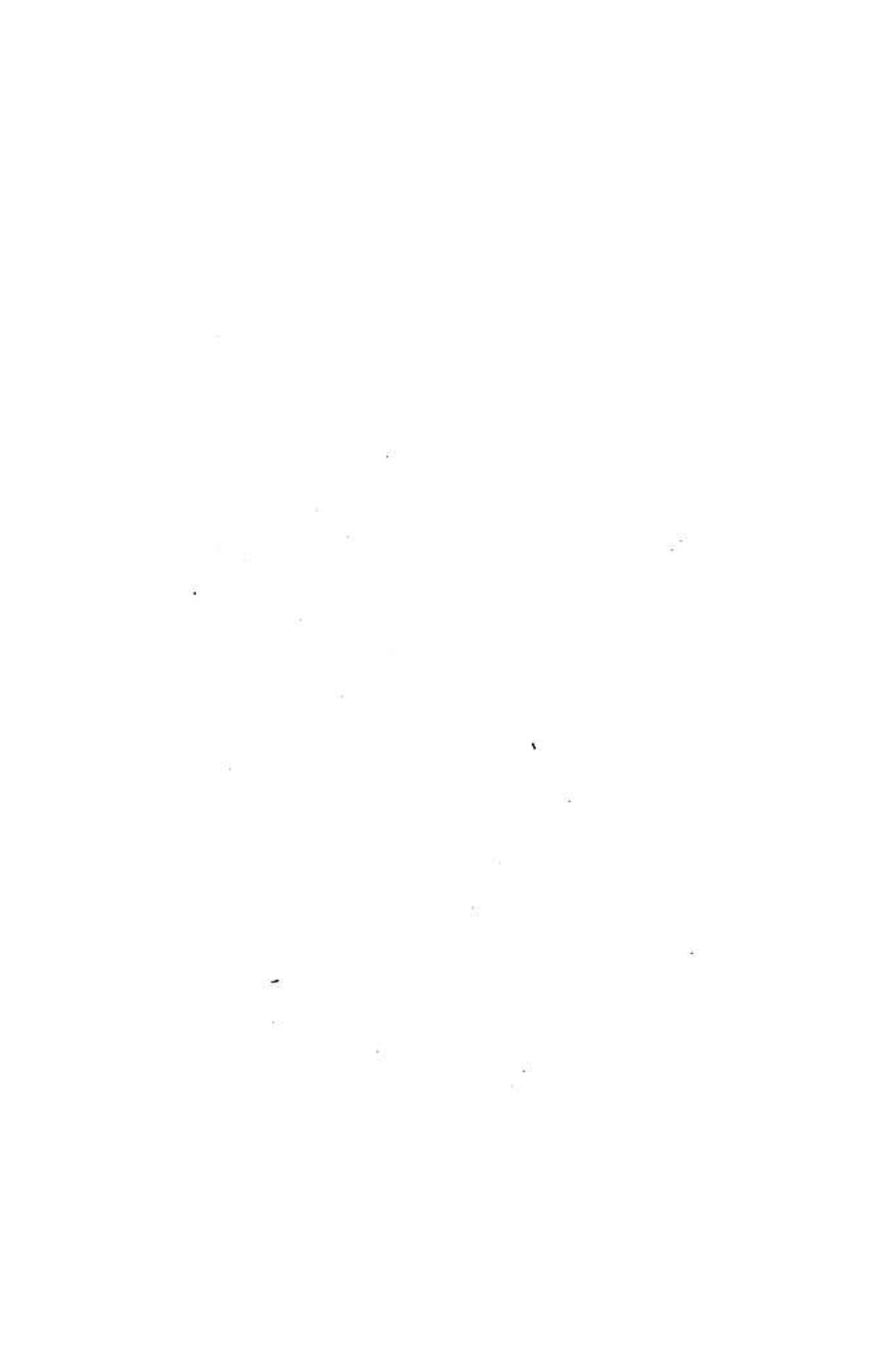
AUTHOR OF "SCIENTIFIC INDUSTRIES," "ELECTRO-METALLURGY," ETC. ETC.

CARVING IRISH BOG-OAK.	NEEDLES.
ETCHING.	LAPIDARY.
GALVANIZED IRON.	IRONFOUNDING.
CUTLERY.	POTTERY AND PORCELAIN.
GOLD-BEATING.	TYPEFOUNDING.
BOOKBINDING.	BREAD-MAKING.
LITHOGRAPHY.	BRONZE-CASTING.
JEWELLERY.	FILE-MAKING.
CRAYONS.	OR MOULU.
BALLOONS.	PAPIER-MACHÉ.

ETC. ETC. ETC.

W. & A. K. JOHNSTON
EDINBURGH AND LONDON

1881



*Gift
Miss Josephine Owen Reed
5-18 1932*

P R E F A C E.

APART from our ordinary studies or pursuits, it is undoubtedly an advantage to have some "hobby," or means of recreation, other than those which are too frequently adopted for the mere purpose of "killing time." While there are some whose mental inclination leads them in the direction of philosophic science or literature for their recreative pursuits, there are many whose taste leans towards those of a more mechanical nature. In all grades of society, from the highest to the more humble members of the community, the vast field of mechanical art has been explored for the purposes of intellectual enjoyment.

Moreover, the pleasure to be derived from making or constructing mechanical objects is not only a most agreeable pastime, but the work, if creditably executed, remains as a testimonial to individual labour and skill, and the simple title **HAND-MADE** carries with it a history of patience, perseverance, and industry which should entitle it to a high rank in human estimation.

Those who may have no desire for a more intimate acquaintance with mechanical operations than may be gleaned by reading, will, it is hoped, find in these pages sufficient information concerning some of our important mechanical arts to interest them, while, at the same time, it has been the author's aim to render the work acceptable to the rising youth of both sexes as a source of useful information and instruction.

CARVING IRISH BOG-OAK.

ALTHOUGH the interest which attaches to the substance known as Irish bog-oak, or "bog-wood," is naturally more keen in the Sister Isle than in our own portion of the United Kingdom, it is probable that a better acquaintance with this remarkable product of nature would kindle at least a fair amount of interest here if its useful applications were better known. The bogs of Ireland, besides yielding turf or peat of most excellent quality for fuel, are remarkable for the large quantity of semi-petrified timber which lies beneath their surface, apparently undergoing by slow degrees the process of conversion into coal. Large quantities of oak, as black as ebony, and in a high state of preservation, had been dug out of the Bog of Allen and other bogs; but no specific use was made of it, we believe, until some forty or fifty years ago, when it occurred to an ingenious old soldier named M'Guirck to utilize it in making certain ornamental articles, such as brooches, paper-knives, shamrock studs, etc. etc.

It was many years after the introduction of bog-oak carving, however, before the art became fully developed; and for a long time it was confined chiefly to the hands of M'Guirck's successor, a man of much ingenuity and skill, by whom many fine specimens of exquisite carving were produced, and which were readily, and even greedily, secured by the more gifted and appreciative of the Irish

nobility and gentlemen of the time, whilst many illustrious visitors to the city of Dublin availed themselves of the opportunity to possess at least one specimen of the carver's work. As time progressed, however, so did the "whittlers" in bog-oak increase and multiply; and by the time the Rebellion of 1848 had culminated in the expatriation of Smith O'Brien and the other leaders of the Young Ireland party, at least half-a-dozen fresh bog-oak carvers appeared in the field; and from that period the number steadily increased, until, as is generally the case, the art became somewhat overdone. Bad workmanship, accompanied by the frequent substitution of ebony for bog-oak, caused the pretty art to lose its individuality and its integrity at the same time. We have a pleasing remembrance of the great interest which many of the leading aristocracy of Ireland took in the manufacture of bog-oak ornaments, after the political disturbances referred to had subsided. The late Master of the Rolls for Ireland, Mr. T. B. C. Smith (or "Alphabet Smith," as he was humorously called), a man of exquisite taste and judgment, suggested many interesting designs from the antique, which were afterwards faithfully duplicated in bog-oak, to the great delight of all who beheld them. Nor was bog-oak carving, at the time we mention, confined to professional hands alone, for many amateurs, including the fair sex, sought recreation in the pleasing art, amongst whom may be mentioned the accomplished daughters of the late Earl of Howth.

Bog-oak is an exceedingly agreeable substance for carving purposes, being both hard and tough. The finest specimens are intensely black. In structure it possesses all the characteristics of ordinary oak, and may readily be distinguished from ebony (or "African bog-oak," as it is termed),

when substituted for the real article, by its open grain and cellular structure.

An important feature in bog-oak carving, when applied to objects of moderate dimensions, such as brooches, snuff-boxes, paper-knives, etc., is the small number of tools required. This is a great advantage to those who might desire to learn the art, but who may possess no previous knowledge of carving in wood. There are few mechanical arts in which such pleasing results may be obtained with so few appliances; but as several of the tools required for special purposes are of a peculiar form, and may not be obtainable at the ordinary tool-shops, instructions will be given to enable the student either to make such tools himself or to have them made to his order.

As a preliminary effort let us first select a piece of bog-oak free from flaws, and as close in the grain as possible. Suppose we commence with a "view brooch," as it is termed—that is, an oval brooch with a landscape or rustic scene carved on one side, with a plain or ornamental border, representing, as it were, a picture in a frame. The first thing to do is to cut a slice of the wood end-way—that is, transversely—with a tenon or circular saw, about $\frac{1}{4}$ of an inch in thickness. With a lead pencil sketch an oval outline, say $2\frac{1}{2}$ inches long by $1\frac{3}{4}$ wide, at the best or soundest part of the wood. Having done this, a second oval is to be drawn *inside* the former, leaving a space of about $\frac{1}{4}$ of an inch between the two. The view or scene is to be sketched in outline within the inner oval. Ruins of old castles and other similar structures look exceedingly well for this purpose, and are by no means difficult, especially to those who have some knowledge of drawing.

Having so far designed the work, it will now be neces-