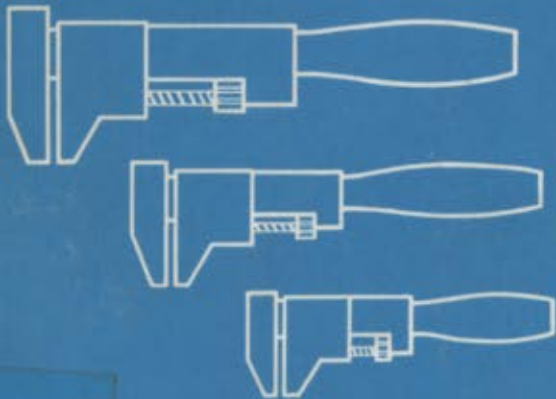


G.A. Pittman

Preparatory Technical English

Pupils' Book



Longman

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PREFACE

This book is intended for the use of apprentices and students who are desirous of improving their comprehension of technical literature written in English and their expression in English of their ideas in technical matters. It is not a grammar and the use of grammatical terms is avoided as far as possible. It is likely to prove of most use to the student who has already a fair knowledge of English and of the fundamentals of English grammar.

The book is based on the selection and teaching of a formal (or written) vocabulary which is common to technical literature of all trades. Such a selection will not include a great many technical terms proper. It is impossible to find many technical terms applicable to all trades. That has not been attempted. It *has* proved possible, however, to find a common vocabulary and sentence structures and certain common ideas used throughout all language in which the technical terms are found. This is especially true of the written language. The vocabulary *associated* with technical terms is dealt with herein, not the technical terms themselves. For this reason apparatus used throughout in the lessons is, technically speaking, simple. The attention of the teacher and student is really directed to the language, not to technical complexities of machines. It is in fact a preparatory course.

The apprentice who is learning both his trade and the English language at the same time is confused by three levels of English.

1. The language he hears by day in the workshop (“Rev it up”, “Put it out”, “Set it down” type) with its everyday monosyllabic words.

PREFACE

2. The level represented by technical terms themselves and his comprehension of them, e.g. “shaft”, “lubricant”, “valve”, “alternating current”, “rafter”.
3. The formal or “elevated” or “literary” language used in his textbooks, his notes of lectures and sometimes by his instructor: “accelerate”, “extinguish”, “deposit”, “function”, “process”, “dimension”.

There has been a tendency to concentrate on the second level and to overlook the very real difficulties presented by the third in the belief that technical English meant technical terms. A glance at technical literature especially at trade level will reveal this is not so.

The following extract, taken from a trade manual *Carpentry and Joinery*, Technical publication No. 19, Department of Labour and National Service (Industrial Training Division), p. 53, shows how a simple technical apparatus is described in such a way that the difficulty in comprehension by the student is due, not to the technical complexity of the apparatus, which is simple enough, but to the “elevated” and complex vocabulary (in *italics*) in which the simple technical ideas are expressed.

Spirit Level

The spirit level is *dependent* on the fact that an air bubble *enclosed* with an *accompanying* liquid in a glass tube will always rise to the highest point. Lines marked on the tube *indicate* where the bubble should come to rest. To check the level, set it up on a firm base with the bubble *registering centrally*; then *reverse* the ends of the level, when the bubble should again register a central position. Any *inaccuracy* should be corrected.

In this book an attempt is made to link the first and the third levels—to relate the language of the workshop to that of the trade manual. Where explanation is provided it is supplied

PREFACE

at the first (i.e. the conversational or workshop) level. The method used is situational, that is, the teacher with the aid of simple apparatus or by his own or the students' movements controls the oral drills of the students. These drills are followed by extracts for reading and by written exercises.

Although oral drills are used as a means of learning (and language teachers should not need to be convinced of their value) students should be discouraged from speaking *habitually* in the “elevated” style.

Throughout the book prominence is given to the vocabulary of:

- i. Description and definition;
- ii. Measurement;
- iii. Degree and proportion;
- iv. Development and processes.

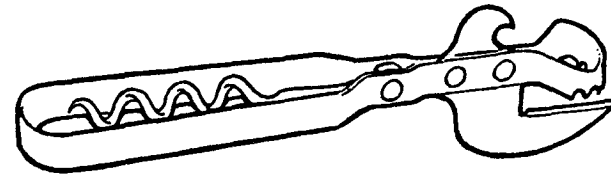
These ideas are at the root of all technical training, elementary and advanced.

It is imperative that such simple technical material as is mentioned in the situation should be used by the teacher before the class. Language teaching is concerned with making vocabulary *operative*, and to do this, drilling in a situation is necessary.

A Teacher's Book is also available containing instructions on the planning of the course and detailed notes.

TWENTY-SECOND SITUATION

FUNCTIONS



I. WHAT ARE THE USES OF A TIN-OPENER?

Here is a tin-opener. It consists of three parts, a short blade with a point, a hook, and a corkscrew. A tin-opener is useful.

It has three uses. Each part has its use.

It has three *functions*. There are three things it can do.

It has *the function* of opening tins with the point and blade.

It has the function of taking the tops off bottles with the hook.

It has the function of drawing corks with the corkscrew.

The point and blade *function* when we open tins with the tin-opener.

The hook functions when we open bottles.

The corkscrew functions when we extract corks.

A tin-opener has three separate functions, that of opening tins, that of taking the tops off bottles, and that of extracting corks.

TWENTY-SECOND SITUATION

Its three parts function in these three uses.

A tin-opener is capable of three operations, opening tins, taking the tops off bottles and extracting corks.

This tin-opener has a tin-opener, a hook and a corkscrew.

This tin-opener *is equipped with* a tin-opener, a hook and a corkscrew.

This tin-opener *is furnished with* a tin-opener, a hook and a corkscrew.

It is equipped with three devices to fulfil three functions.

It is furnished with three devices to fulfil three functions.

II. WHAT ARE THE USES OF YOUR HAND?

The *functions* of your hand.

Your hand can grasp things.	Grasping is a use of your hand.
Your hand can grasp things.	Grasping is a function of your hand.
Your hand can hold things.	Holding is a function of your hand.
Your hand can twist things.	Twisting is a function of your hand.
Your hand can pull.	Pulling is a function of your hand.
Your hand can push.	Pushing is a function of your hand.
Your hand can turn.	Turning is a function of your hand.
Your hand can feel.	Feeling is a function of your hand.

Our hands are equipped with four fingers and a thumb to permit them to function in the ways described above. The joints of our wrist, hand, fingers, and thumb and our nerves function so that we can do all these things.

FUNCTIONS

III. WHAT ARE THE FUNCTIONS OF A HOUSE?

1. The function of a house is to protect us from the weather.
2. The function of a house is to shelter us and our equipment from the weather.
3. The function of a house is to contain the equipment for living. The equipment for living is our clothes, our furniture, machines, books and personal belongings.
4. The function of a house is to express our personality.

IV. WHAT ARE THE FUNCTIONS OF A LUBRICANT?

The functions of a lubricant are to reduce wear on surfaces which touch each other and move, to reduce heat, and to permit high speeds without seizing.

(Note.—If you start your sentence with “The function of a . . .” you should use the verb with “to”. If you start with “It has the function . . .” you should go on to use “of” followed by the verb ending in “-ing”.)

READING

I. “EFFECTIVE”—“THE EFFECT”—“TO EFFECT”

If a thing or a material is called “effective” it means that it does the work required of it. A bicycle pump and its fittings are an effective means of getting air into a tyre. The injectors of a diesel engine are an effective means of introducing the fuel into the cylinder. If the radiator of my car begins to leak and I am far from a garage I may be able to stop the leak with chewing gum. This will be effective perhaps, but only for a time. I use the chewing gum when I cannot get the proper repairs done, that is, in an *emergency*. In an emergency, something must be done immediately with what is available. Later I shall have to solder the leaks of the radiator, but for the time being the chewing gum will serve my purpose. It is *temporarily effective*. It is not *permanently effective*.

“The effect” means the result. The effect of over-inflating tyres is to make a very bouncing ride. The effects of badly adjusted timing in an engine are many. Its results are many. You may be asked in examinations on your trade, “What are the effects of . . . ?” It means “What are the results of . . . ?” and you should be careful to mention all the results you know about. We speak often of “cause and effect”, meaning a cause and its result. We always hope that repairs will be effective, will have the effect of making an engine work well. We often speak of “the fullest effect”. To get the “fullest effect” something is used as much as possible without damaging it. To get the fullest effect of a new machine it must be constantly employed so as to produce a great deal. Some medicines take effect after an interval. Some improvements need *time to take effect*, to begin to operate.

“To effect” means to do, to make or to bring about. We speak of “effecting repairs”, doing repairs. We effect adjustments, we effect an improvement, we effect a junction (join).

You will meet these words often in books about technical matters. These are useful words to use in your writing.

II. JET ENGINES

“We approach the assembly line where jet engines are assembled from the many hundreds of parts that have been so beautifully and accurately made. We learn that a jet engine has three main components: the compressor, in which air entering a duct at the nose of the aircraft is compressed by tiny whirling blades until it exerts a pressure of about 7 kilograms to the square cm.; the flame tubes (of which there are eight in the engines in front of us), in which a mixture of fuel vapour and compressed air burns at a temperature which, at the centre of each tube, reaches as high as 2,200 degrees centigrade, and a

turbine, the blades of which are set whirling by the stream of hot gases. The function of the turbine is to drive the compressor, and both are therefore mounted in beautiful balance at opposite ends of the one shaft, which is in reality the only moving part in the whole engine. At the rear of the turbine is a long tail-pipe, or exhaust, by means of which the residual gases escape.” (Extract from “Victorian Education Department’s School Paper Supplement”.)

ACTION I

Hold your left hand out, palm downwards.

Hold it horizontal. Hold it *level*.

Hold your right hand out level, palm downwards, at the same height as your left hand.

Keeping your hands level with each other move them together *until they touch* or nearly touch.

Keeping your hands level with each other, move them together *until they are adjacent* to each other.

They are now *level and adjacent*.

They are now *flush with* each other.

Hold your hand flush with your bench, with your seat, with the bottom of your chin, with the top of your ear.

ACTION II

Put your elbow on the desk.

Keep your forearm vertical.

Move your forearm with a rotary movement several times keeping your elbow still (on the desk).

Your forearm is *pivoting on* your elbow.

Your elbow is the point on which your forearm is turning.

Your elbow is the *pivot* of the movement.

EXERCISES

1. Answer 10 questions each with these types of sentences.
 - (a) The function of a tap is to control the flow of liquid.
 - (b) A tap has the function of controlling the flow of liquid. What is the function of a safety pin, a tap, a typewriter, a fuse, a vice, a telephone, a bracket, a bearing, a match, a fan, a spanner, a radiator, a switch, a carburettor, a file, a pair of callipers, a micrometer, an earth wire, a floor cramp, a prick punch?
2. What is the difference between these words, taken horizontally in groups of three. (Differences may be shown by sentences or by actions.)

tap	knock	hammer
damp	moist	saturated
dab	wipe	rub
remove	replace	renew
slit	slot	gap
vertical	inclined	horizontal
impede	obstruct	plug
explode	burn	smoulder
minimum	average	maximum
elevated	level	low
rough	coarse	fine
3. Complete six of the following sentences:
 - (a) The function of a thermostat is . . . which is done by means of
 - (b) The function of a plumb-bob is . . . and its components are
 - (c) The difference in function between eaves gutters and a box gutter is
 - (d) A square has the function of
 - (e) The teeth of a file are set so as to make the forward stroke

FUNCTIONS

- (f) The fuel indicator has the function of
 - (g) The function of ant-stops is to
 - (h) If ant-stops are holed they
 - (i) Each part of a well-designed machine is designed so as to fulfil
 - (j) The difference in function between a mallet and a hammer is
4. Answer fully three of the questions below:
 - (a) Name the 3 principal parts of any drill and explain the function of each part.
 - (b) Name 3 types of punch, draw them, and explain the function of each type.
 - (c) Name 3 types of chisels and explain their functions.
 - (d) Name 3 types of scrapers, draw them, and explain their functions.
 5. What are the effects of:
 - (a) over-winding a watch?
 - (b) over-inflating tyres?
 - (c) over-oiling a machine?
 - (d) the over-heating of bearings?
 - (e) over-confident driving?
 - (f) fast driving with heavy loads?
 - (g) over-use of the horn when driving a car or truck?
 - (h) irregular maintenance of machines?
 - (i) using blunt tools?
 - (j) inaccurate measurements?
 6. Answer 4 of the questions below:
 - (a) What is the function of piston-rings? Describe them.
 - (b) What is the function of an oil filter? Describe it.
 - (c) What is the function of a valve? Describe one type.
 - (d) What is the function of a cover batten? Describe it.
 - (e) What is the function of a reamer? Describe it.
 - (f) What is the function of a protractor? Describe it.
 - (g) What is the function of a lubricant? Describe one type.