

ENGLISH IN FOCUS

English in Basic Medical Science

Joan Maclean

TEACHER'S EDITION

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Editors' Preface

The aim of the *English in Focus* series is to develop in students who are entering higher education an ability to handle the kind of written English that they will be concerned with as an integral part of their specialist subject. The approach is one which recognizes that learning a language is not merely a matter of learning sentence patterns and vocabulary but must also involve an understanding of how people use these linguistic forms in order to communicate. Our purpose is to make students aware of the way English is used in written communication, and thereby to help them develop techniques of reading and to provide them with a guide for their own writing.

The books in this series are based on the belief that intermediate and advanced students who are studying English as a necessary part of their specialist studies need a distinctive type of textbook: one which reflects the nature of the learning problems encountered at this stage, and which presents the language as an aspect of the subject they are studying. We feel that a textbook directed at students at this level should attempt to do more than simply repeat the formulas in elementary language teaching material. Most courses of English concentrate on teaching the language system and fail to show how this system is used in communication. As a result, students may know about such formal items as affirmative sentences or modal verbs, but not know how these items are put to use in the making of different kinds of statement and in the production of continuous pieces of discourse.

The principal purpose of *English in Basic Medical Science*, as of the other books in this series, is not to teach more grammar, but to show students how to use the grammar they already know. In writing this book two basic assumptions have been made. Firstly, it is assumed that the students have had a good deal of instruction in grammar and that they have a considerable dormant competence in English. The book is directed at activating this competence, and extending it, by leading the student to relate his previously acquired linguistic knowledge to meaningful realizations of the language system in passages of immediate relevance to his specialist studies. Secondly, it is assumed that students already have a knowledge of biology and science, and are acquainted with elementary anatomy and physiology. The aim is not to teach the subject-matter of medicine but to develop in the reader an understanding of how this subject-matter is expressed through English. It should be emphasized that this

book is not designed to teach either language in isolation or subject-matter in isolation but the manner in which both combine in meaningful communication. Our belief is that by relating content and expression in this way, the subject-matter takes on a new interest and the linguistic difficulties are reduced.

Although the subject-matter has been kept simple throughout, the degree of language complexity varies in a regular way. The presentation in each unit takes the form of a cycle, with a simpler treatment of the subject-matter at the beginning and working up to a more complex treatment at the end. In the earlier sections the material is presented in simple language in order to get the student to concentrate on the rhetorical features used in medical writing. In the final section of each unit the language is more complex, and is intended to approximate to the kind of language that the student will find in his medical textbooks.

In order to ensure the natural communicative function of language grading is by *focus* rather than by *exclusion*. Since it is assumed that the readers of this book already have a fairly wide knowledge of English grammar, and also have access to a standard dictionary and other reference books, the author has been able to avoid an unnatural step-by-step presentation of grammatical patterns and vocabulary, and instead aims to show how a fluent writer uses the whole resources of the language in performing various acts of communication. At the same time, care has been taken not to overload the student with new material, and complex structures have been avoided except where they are necessary in maintaining a natural use of language. We believe that the book will prepare the student to cope with greater linguistic complexity by developing in him a reading strategy which he can bring to bear on the material in the textbooks he has to read.

In the exercises an attempt has been made to avoid the more mechanical types of drill, and to ensure that the practice material is always fully meaningful. All the exercises are drawn from the context of basic medical studies and, together with the reading passages, give a representative range of the vocabulary which students are likely to find in their specialist textbooks. It is hoped that this type of exercise will make the student see the relationship between expression and content, and will therefore persuade him of the relevance of English learning to his own specialist field. In the last resort, we depend on the student being prepared to teach himself, to concentrate diligently on the features of language exemplified in the texts, and to approach the linguistic content of this book with the same spirit of inquiry and desire for knowledge as he would be expected to bring to his study of medicine.

It is appreciated that, even in a course whose primary concern is with the written language, the teaching process must inevitably bring in the spoken form as well. Therefore, in order to assist both teacher and learner, the texts have been recorded, as also have those exercises containing additional vocabulary, the pronunciation of which might otherwise pose a problem.

J. P. B. A.

H. G. W.

Introduction

1. Guide to the book

The book consists of eight units. The first seven of these are each divided into five sections:

- I: Reading and comprehension
- II: Use of language
- III: Information transfer
- IV: Guided writing
- V: Free reading.

Unit 8 does not have this arrangement. It is designed to give more practice in the work of the first seven units, and to provide further work in areas of medicine which have a very specific language. For this reason Unit 8 is called *Summary and extension exercises*.

The five sections have the same basic pattern in each unit. This is as follows:

I READING AND COMPREHENSION

This section begins with a reading passage. In it are inserted sets of comprehension checks in the form of statements which may or may not be correct. The learner has to decide whether each statement is true or false. The checks are inserted within the reading passage itself rather than at the end so that the learner is encouraged to think about what he reads *as* he reads. Once he realizes that his understanding is going to be checked systematically in this way, he is likely to read more attentively for meaning and to treat his reading not simply as a language exercise relevant only to the English class but as a technique for acquiring information.

The comprehension checks require the learner to indicate whether a given statement is true or false according to the reading passage. But it is important that he should know *why* a statement is true or false. Each comprehension check is therefore provided with a solution, which refers the learner to those features of the reading passage which are evidence for the truth or falsehood

of the statement in the comprehension check. The solutions are explanations in that they point out what the reader must notice and how he must reason in order to arrive at the correct decision. Explanations of this kind are, of course, not necessary to someone who already has an efficient reading ability in English. At first glance it might appear that the solutions are too elaborate and detailed. But the purpose of the solutions is to make the learner aware of what is involved in reading with understanding, so that he may develop a reading strategy which he can apply generally to the texts he has to deal with in his study of medicine.

Sometimes a solution will serve simply to remind the learner of the knowledge of English he already has. In Unit 1, for example, comprehension check (e) requires the learner to recognize that the same idea can be expressed either as:

The compartments of the body are measurable.

or as:

It is possible to measure the compartments of the body.

But the ability to recognize whether a given statement is true or false according to the reading passage does not come only from an understanding of the meaning of individual words and sentences. Very often it is a matter of recovering information which is implied rather than explicitly stated and of tracing the way in which what is expressed or implied in one sentence is related to what is expressed or implied in another. It is the function of many solutions, therefore, to make such implications explicit and to spell out the relationship between different statements. In Unit 1, for example, comprehension check (h) requires the learner to relate what is expressed in sentence 7 and sentence 11, and what is expressed and implied in sentence 12. This relating process is represented by the solution as follows:

A healthy young woman has normally twice as much fat. (12)
 twice as much fat = twice as much energy reserve (see 7)
 twice as much energy reserve (as a healthy young man)
 = $2 \times$ approximately 15% of the total body weight (see 11)
 $\therefore$ *The energy reserve of a healthy young woman is approximately 30% of her total body weight.*

What solutions of this kind do, then, is to spell out certain reasoning processes which are employed by the efficient reader as a matter of habit. As the learner progresses through the book an increasing number of the comprehension checks and solutions are of this type.

The first three exercises following the reading passage are a logical development from the solutions. Each focuses on a feature of language use which is frequently referred to in the solutions and which is particularly relevant to an understanding of how English is used in written communication.

EXERCISE A *Contextual reference*

This exercise draws the learner's attention to the way pronouns and demonstratives are used to refer to something already mentioned, so serving to relate one statement to another. Very often there is more than one grammatically possible connection between noun phrases, and the reader has to decide which reference makes sense in the context of the passage. This is the case, for example, with Exercise A (1) in Unit 2:

these in sentence (2) refers to

Grammatically, *these* could refer to *carbohydrates* (sentence 1), *fats* (sentence 1), *proteins* (sentence 1), or *carbohydrates, fats and proteins* (sentence 1).

Exercise A, then, obliges the learner to scrutinize the passage to assign the correct referential value to anaphoric pronouns and demonstratives. This exercise is not difficult, and it may sometimes seem obvious what a given item refers to. However, it must be remembered that we are not concerned just with getting the learner to recognize the contextual reference of a particular language item in a particular passage but with developing a general ability to handle this feature of language use. This exercise directs the learner's attention to the way anaphoric pronouns and demonstratives work and so prepares him for those cases where the identification of the reference is not so easy.

EXERCISE B *Rephrasing*

Essentially the purpose of this exercise is to make the learner realize that writers commonly express the same idea in different ways and that there is no one-to-one correspondence between one linguistic form and one meaning. Two phrases may mean the same thing only within the context of a particular passage and it is therefore only by studying the passage that the equivalence can be established. For example, in Unit 2, Exercise B (3), *as* is the equivalent of *in the form of*.

EXERCISE C *Relationships between statements*

Expressions like *therefore*, *consequently* and *however* indicate what function a particular sentence is meant to fulfil. A sentence which contains *therefore* is used to make a statement which follows logically from a previous statement. Similarly, *for example* indicates that the sentence is used to make a statement which illustrates a point made previously. Such expressions are explicit indicators of the communicative function of sentences. Writers do not always use these explicit indicators, but very often assume that the reader will realize how a particular sentence is to be understood without the assistance of such indicators. It is, of course, crucial for the student learning to read a foreign language to understand which statements are meant to be illustrations, qualifications, conclusions and so on, and how statements are logically related

to each other. The purpose of Exercise C is to make the learner aware of such communicative functions and of the way written discourse develops.

The exercise takes different forms from unit to unit, but in all of them the learner is required to insert indicators into the reading passage. In Unit 1, for example, the learner has to insert a given indicator into a given sentence. There may or may not be an indicator in the sentence already. Thus he is given:

i.e. (5)

In this case, the student has simply to refer to sentence 5, remove *or* and replace it with *i.e.* But in Unit 5 the learner has to insert the given indicator into a given paragraph. In this way the learner is made aware of the relationships between the sentences in the paragraph.

The exercises in this section are designed to make little demand on the learner's productive ability. Their purpose is to direct the learner to a discovery of what is involved in the comprehension of the written language of medicine.

II USE OF LANGUAGE

This section usually consists of four or five exercises. The first of these is designed so as to extend comprehension into productive written work. The learner is asked to complete a diagram according to his understanding of the reading passage. Once the diagram is complete, it serves as a model for written work, in which practice is given in some essential feature of the language of the reading passage.

The remaining exercises vary from unit to unit. They may deal with points of grammar which represent continuing 'trouble spots' for many students; or they may deal with special vocabulary, or language techniques such as listing. In any event, the exercises are designed to focus on language which is particularly important in medical writing, and no attempt is made to provide a detailed review of English grammar. As stated above, it is assumed that the student already has a knowledge of basic English grammar.

III INFORMATION TRANSFER

In this section, as in the first exercise of Section II, the learner is required to transfer information from diagrams to writing. The language work is related to the language of the reading passage and Section II, and points of language from preceding units are incorporated. The student is given a certain amount of guidance, usually in the form of a paragraph with blanks which he has to fill in. The guidance decreases as the student proceeds through the section.

The purpose of this section is to give the learner immediate practice in the language he is meeting in other parts of the book, and also to allow him as much independence as possible in producing written work of quality.

IV GUIDED WRITING

The aim of the guided writing exercises is integrative rather than analytic, i.e. the student uses a wide range of grammatical devices and sees how they combine to produce an integrated piece of writing. Each guided writing exercise is done in four stages. At the first stage the student examines various groups of very short, simple sentences and combines each group into a single sentence. In the earlier units in particular, clues are provided on how to combine the sentences. At the second stage the student creates a coherent paragraph by rewriting his sentences in a logical order, adding various 'transitional' features where necessary. Thirdly, the student checks his work against a version of the paragraph incorporated into the free reading passage in Section V. The paragraph writing is designed to allow the student some scope in exercising his own judgment, and so there is no reason why the student's version should be identical to the one in the book. If the paragraphs differ, the student should try to evaluate the relative merits of the two versions. At the fourth stage the student writes the paragraph again in a 'free style' of his own devising, based on a set of notes which are similar to the rough jottings made by an author when he is sketching out a plan for a paragraph. Thus the student is led by stages to the point where he can write a paragraph of his own, in a way which seeks to imitate some of the processes of real-life composition.

V FREE READING

This section consists of a reading passage, longer and more complex than that in Section I. It incorporates a version of the paragraph resulting from the exercise in the previous section. The previous sections in the unit impose a fairly strict control over the student's activities; this section has been included to give him an opportunity to try out what he has learned in his own way and in his own time.

2. Teaching Suggestions

The following notes indicate how the first unit might be dealt with in the classroom. The other units can be handled in a similar way. These notes are intended to be suggestions only. It is expected that the teacher will develop his own procedures according to the needs of his students. It will be for the teacher to decide, for example, whether to pay more attention to oral or to written work, how to divide the material into class sessions, and how much work is to be done under supervision and how much as homework.

I READING AND COMPREHENSION

(i) Reading the text

Get the class to read sentences 1-7 by themselves.

Take the class through the explanation, and do questions (a) and (b) with them so that it is clear what they have to do.

Get the class to do questions (c) and (d) on their own.

Choose one student. Ask him whether he has decided that (c) is true or false.

Ask him to justify his decision with reference to the appropriate parts of the passage. Ask other students whether they agree, and if not why not. Get the class to turn to the solution for (c). Read it aloud to the class while the students follow it in their books.

Choose another student and do the same with (d).

Read sentences 1–7 aloud to the class while they follow in their books.

Get the class to read sentences 8–12 by themselves.

Get the class to do questions (e) to (h) on their own, and repeat the process as for (c) and (d).

Read the whole passage aloud to the class (without the questions) while the students follow in their books.

(ii) Exercises

EXERCISE A *Contextual reference*

Get the class to do the exercise in their notebooks.

Choose a student and ask him what he has written for 1.

Ask him to replace the item indicated with the word or phrase he has chosen, and to read out the sentence which results.

For example, a student choosing 'the three compartments' will read out:

'The first of the three compartments consists of active tissue, which is also known as cell mass.'

Ask the class to judge if he is correct and to offer any alternative.

Repeat the process for 2 and 3.

EXERCISE B *Rephrasing*

Get the class to do the exercise in their notebooks.

When the class have finished the exercise, write the first sentence on the board.

Underline the expression which is to be replaced.

Select a volunteer to come to the board and write the replacing expression above the words which are underlined.

Ask the class to judge whether the rephrasing is appropriate.

Consider alternatives if necessary.

Bracket together the appropriate replacement(s) with the original expression as follows:

In a healthy young man, approximately 55% of the total body weight consists of $\left\{ \begin{array}{l} \text{active tissue} \\ \text{cell mass} \end{array} \right\}$.

Do the remaining sentences in the same way.

EXERCISE C *Relationships between statements*

Get the class to do the exercise in their notebooks.

When the class have finished the exercise, write sentence 5 on the board.

Select a volunteer to come to the board and indicate the change as follows:

This is composed of bone minerals, extracellular proteins, and the internal
i.e.

environment, ~~or~~ the extracellular fluid in the blood and lymph.

Ask the class to judge if the change is correct.

Do the remaining sentences. The following method of indicating a change may also be used:

of course

These compartments cannot ^ be separated by physical dissection,
but it is possible to measure them indirectly.

II USE OF LANGUAGE**EXERCISE A** *The description of structure*

1. Get the class to complete the diagram and use it to write out the sentences in 2, 3 and 4 as instructed.

Put the diagram on the board and complete it with the students' help. Get the students to correct their own diagrams. Get individual students to read out the sentences they have written.

5. Get the students to do exercises (a) and (b) in their notebooks. Ask one student to read out what he has written for (a). Ask the class for alternatives. Make sure that examples are *elicited* moving both up and down the diagram.

Do the same with (b).

EXERCISE B *Defining and non-defining relative clauses*

Get the students to read the grammatical explanation carefully.

Discuss examples (d) – (i) with the class, making sure that the explanation is understood.

Allow the students several minutes to study the example at the head of the exercise, and to look at the first sentences in the exercise.

Do the sentences orally.

Get the students to write the sentences in their notebooks.

While they are doing this, go round the class, giving individual help where necessary.

EXERCISE C *Relative clauses with prepositions*

Proceed as in Exercise B.

III INFORMATION TRANSFER

1. Give the class a minute or two to study the diagram.
Choose a student to complete the first sentence orally.
Give the class time to study the remaining sentences.
Ask the class to write out sentences in their notebooks.
Get one student to read out what he has written, while the rest check what they have written.
2. Give the class time to study the diagram and to complete the paragraph.
Taking the sentences one by one, get individual students to read out what they have written.
When the last sentence has been dealt with, choose a student to read out the whole paragraph.
3. Proceed as for 2.

IV GUIDED WRITING

STAGE 1 *Sentence building*

Get the students to study the instructions at the head of the exercise.
Do the first two or three sentences orally.
Get the students to write all the sentences in their notebooks.
Give individual help where necessary.
Taking the sentences one by one, get individual students to read out what they have written. Write the correct version of each sentence on the board.

STAGE 2 *Paragraph building*

Get the class to suggest how the additional material should be incorporated.
Make the appropriate changes on the board.
Get the students to write a paragraph in their notebooks, following the instructions.
After the students have written their paragraphs, get the class to number the sentences on the board in the correct order.
Get the class to suggest a suitable title.
Discuss any differences between the version on the board and the version given in the free reading passage.
Give the students time to change their own paragraphs where necessary.

STAGE 3 *Paragraph reconstruction*

Give the students a few minutes to read through their paragraphs.
Discuss the meaning of any unknown words.
Tell the students to close their notebooks or hand them in, and to rewrite the paragraph on a separate sheet of paper, using the notes provided. Tell the

students that they may use whatever they can remember of the original, combined with their own words. Go round the class and give individual help when necessary. Take in the students' work and correct it. This correction will indicate the students' progress and suggest areas of difficulty for future treatment.

V FREE READING

Tell the students to read the passage in their own time.

Encourage them to look for points of interest in the text and to relate them to the exercises in this and other units.

Tell the students to make a note of any unfamiliar words and to look them up in their dictionaries. Get them to practise using these words in sentences of their own.

Repeat this process with further passages selected from standard texts used by the students in their medical science classes.

Recording

A recording of all the reading passages and of the key to the 'Use of Language', 'Information Transfer' and 'Essay Writing' exercises is available on cassette.

A useful revision exercise is to play the recording of the reading passage while the students follow the text in their books. If it is necessary to develop the learners' ability to comprehend spoken English, follow this up by giving comprehension questions orally. (See pages 99–101 for questions relating to the free reading sections.) The recording of the key to the grammar exercises will serve as a model if the teacher wishes to do these exercises orally.

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