to vision to start by specifying the tasks carried out by the visual system and by identifying the relationships between the visual image and the real world that make the execution of each task possible. Spoehr and Lehmkuhle, however, like many other psychologists, are so carried away by their reckless quest for data that they forget about function. Whether they are discussing the black choroid coat of the retina or the use of features in recognition, they never ask the question "Why?". Instead they pour out a flood of recent "discoveries", many of which have an air of banality: the more eye movements someone makes when looking at a picture, the better he remembers it; pictures in which sections have been jumbled around are harder to process than normal pictures; an intervening verbal description provided by the experimenter can alter memory for a picture. One feels the results of such experiments would only have been worth reporting had they come out in the opposite direction. A few findings, such as the

discovery of the iconic store, and some of the recent work on imagery, are of more interest. Spoehr and Lehmkuhle describe them all with equal enthusiasm.

Visual Information Processing is, for the most part, clear and since there are few other texts reviewing the last dozen years' work in the area it will undoubtedly be used. It will, however, appeal only to students who like the cosy safety of learning experimental results by heart, and who do not want to be made to think. It contains a few howlers, for example, "Objects at a distance appear smaller" where the context makes it clear that the authors should have written "have smaller visual images" (p.34). It is a pity the authors have not devoted less space to the obvious and attempted to relate the results they report to the function of the visual system. □

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Knowing psychology

P.E. Bryant

History and Systems of Psychology.

By James F. Brennan.

Prentice-Hall: 1982. Pp.374.

\$25.45, £20.35.

Conceptual Issues in Psychology.

By E.R. Valentine.

George Allen & Unwin: 1982. Pp.200.

Hbk £12, \$25; pbk £5.95, \$9.95.

"WHO knows psychology who only psychology knows?" is a paraphrase which ought to be dinned into every new student of the subject. It is inconceivable that anyone could become a reasonable psychologist without also learning a great deal about its philosophical background and about neurophysiology too. Some knowledge of linguistics and of the workings of computers can also be a great help.

This is a lesson which students usually take some time to learn. One reason for their slowness is that psychology's connections with other subjects are rooted in its history, which on the whole has not been described entertainingly. The histories of psychology available to students are for one reason or another definitely daunting, which is a great pity because it means that many students end up learning nothing historical and therefore knowing little about the reasons and the assumptions behind much of the current research in psychology.

James Brennan's simple and attractive textbook is an attempt to stop this particular gap, and on the whole it does so very successfully. Its breadth is staggering, starting as it does with the Greeks, going on with some panache to the Renaissance, and then step by accurate step through to the

birth of psychology in the nineteenth century. The book culminates with a stimulating account of the early psychological schools and finishes with a brief summary of contemporary trends. The way in which the author manages to marshal such a large and varied cast and in the end to produce a coherent story is truly impressive. Of course in so few pages each strand receives rather short shrift, but there could not be a better, simpler start for a student who wants to know about the history of the subject and also to learn how to cope with those other, weightier and more forbidding historical tomes.

Elizabeth Valentine's book is as successful, but in a different way. She writes about the concepts and assumptions behind a lot of contemporary, empirical psychology. Many of the questions which she poses are as philosophical as they are psychological. Free will, the mind-body problem, what is meant by consciousness, the role of the theory — our inability even now to be sure about these familiar problems is a good enough illustration of our need for a sound philosophical framework.

Again this book is meant for students, and it is written simply and attractively. Each chapter presents the main points of view so directly that no room is left for confusion. Often Dr Valentine makes little attempt to resolve the arguments one way or the other, but that is not the main concern of her book. There could hardly be a better exposition of psychology's conceptual problems, and any student who reads both Dr Valentine's book and Dr Brennan's will understand the reasons for some of the subject's most persistent problems and for many of its most notable successes too. □

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Chemistry on the rocks

Peter S. Liss

The Geochemistry of Natural Waters.

By James I. Drever.

Prentice-Hall: 1982. Pp.376.

\$37.15, £29.70.

Inorganic Chemistry and the Earth.

By J.E. Fergusson.

Pergamon: 1982. Pp.400. Hbk £20, \$40;

pbk £9.95, \$19.95.

Inorganic Geochemistry.

By Paul Henderson.

Pergamon: 1982. Pp.372. Hbk £21, \$42;

pbk £9.25, \$18.50.

Q. "What is a geochemist?" A. "Someone who knows little geology and even less chemistry". Since these books are all about geochemistry, and in view of the well-known put-down quoted above, is there anything much to be learnt from them? In brief, the answer is rather a lot.

Before turning to the individual books, a few words should perhaps be spared to try to undermine the rather outdated idea underlying the response to the above question. Indeed, I suspect the attitude embodied in that answer applies to most cross-disciplinary subjects. It is as though by trying to link two or more bodies of knowledge, the practitioners of interdisciplinary subjects have somehow broken faith with their former co-religionists in the true unidisciplinary congregations — this in spite of the fact that the cross-disciplinary subjects have often attracted and trained excellent mono-disciplinary specialists. More important, however, is that, at its best, the synthesis of knowledge from different areas has produced something greater than the sum of the parts. The lateral thinking involved has created a whole new subject with a way of looking at things of its own.

Of the three books reviewed here, that synthesis of viewpoints is best achieved by Drever in *The Geochemistry of Natural Waters*. As the title suggests, the book focuses on natural waters (fresh, saline, and mainly unpolluted) and on the processes that control their composition. The subject matter is not constrained by externally imposed divisions, for example inorganic and organic effects are treated as necessary, and not compartmentalized according to some preconceived plan inherited from pure chemistry. This gives the book an internal unity, which is helped by the treatment of basic chemical, geological, biological etc. concepts largely as they arise, rather than in some preamble or glossary, as is often the case elsewhere. The author has a remarkable ability to explain complex ideas clearly, and I'm sure his book will be a great success with both students and teachers. Although its scope isn't as wide, Drever's book bears compar-