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THE DISCOVERY OF PENICILLIN

The discovery of penicillin introduced a new epoch in the treatment of disease. It has been followed by an intense search for other "antibiotics," and a whole range of bacterial infections have now come within the effective control of substances produced, for the most part, by moulds, among which *Penicillium notatum* holds pride of place not only historically but also therapeutically. We stand so close to a bewilderingly rapid sequence of discoveries that as yet we probably fail to understand fully the revolution in medicine that has taken and is taking place as a result of Alexander Fleming's discovery. It is natural that the world will acclaim a medical advance "great" in proportion to the curative benefits it brings, and on this count alone Sir Alexander Fleming has his place among the immortals. And close beside him will be Sir Howard Florey and Dr. Ernst Chain, who in a systematic investigation of antibacterial substances ten years later hit upon the technical ways and means of fulfilling the promise Fleming held out for penicillin in 1929. Fleming had the real naturalist's capacity for observation and the scientific imagination to see the implications of the observed fact—a capacity and an imagination which, it is true, only the prepared mind can compass, and which in the great discovery seem invariably to be joined to a mind that is essentially humble. As there have been some popular misconceptions of the part Fleming played in discovering penicillin it may not be inappropriate at this time of his death to recall in his own words some of the observations he summarized in his historical paper in the *British Journal of Experimental Pathology* for June, 1929:

"A certain type of penicillium produces in culture a powerful antibacterial substance."

"The active agent is readily filterable and the name 'penicillin' has been given to filtrates of broth cultures of the mould."

"The action is very marked on the pyogenic cocci and the diphtheria group of bacilli."

"Penicillin is non-toxic to animals in enormous doses and is not irritant. It does not interfere with leucocytic function to a greater degree than does ordinary broth."

"It is suggested that it may be an efficient antiseptic for application to, or injection into, areas infected with penicillin-sensitive microbes."

The discovery recorded in Fleming's paper is a milestone in the history of medical progress, and the "penicillin" he discovered and named has come nearer than any other remedy to Ehrlich's ideal therapia sterilisans magna.

ANTICHOLINERGIC DRUGS FOR PEPTIC ULCER

During the past few years a spate of anticholinergic drugs have been introduced for the treatment of gastro-intestinal disorders, particularly peptic ulcer and enterospasm. Belladonna has had a time-honoured role, and these new preparations have sought to emulate its action but with fewer undesirable side-effects. "Banthine" (methantheline bromide) blazed the trail and has been followed by a bewildering number of other drugs, including "antrenyl," "bentyl," "centrine," "lergine," "lytensium," "merbentyl," "monodral," "pamine," "prantal," and "wyovin," and much has been written on both sides of the Atlantic about their pharmacological and clinical effects. In the *Journal* this week a special study of lergine (tricyclamol chloride) is presented by Drs. Pamela Aylett and A. H. Douthwaite.

All these drugs have much in common. Their chemistry is complex; they achieve an anticholinergic effect like atropine by blocking transmission either at autonomic ganglia or at the peripheral effector site; they reduce basal secretion, slow the emptying time of the stomach, and lessen intestinal muscular activity. Although side-effects are generally claimed to be slight, in practice the usual atropine-like disturbances of impaired vision and dryness of the mouth are quite common, and sometimes there may be constipation and difficulty in urination. Moreover, the response varies considerably between different patients and even in the same patient at different times.

The therapeutic contribution of these new drugs is not impressive, and they have not greatly advanced the therapy of peptic ulcer. Nor were they likely to do so, since atropine and related drugs, although undoubtedly beneficial for smooth-muscle spasm, have never been conclusively proved to give great benefit in cases of peptic ulcer, though most clinicians would agree that belladonna can help to relieve pain, particularly night pain, in duodenal ulcer. According to Nicol[1] even large doses of atropine had very

[1] Nicol, B. M., *Lancet*, 1939, **2**, 881.
[2] Rowlands, E. N., *et al.*, ibid., 1952, **2**, 1154.
[3] Friedlander, P. H., ibid., 1954, **1**, 386.
[4] Texter, E. C., and Barborka, C. J., *Postgrad. Med.*, 1954, **16**, 449.