up merely because certain questions were unresolved.

Air pollution as a problem of human ecology, with particular reference to the metabolism and regulation of the ecosystem was the concern of Sargent (University of Illinois, Urbana). While the emission of pollutants is related to the metabolism, especially of urbanized regions, regulation may either be an adaptive function of the individual or a function of the social system seeking to reduce pollution or its effects. Since man's genetic or phenotypical adaptive capabilities are past-oriented, a strategy based on air quality standards is required, and included within it should be recognition of patterns of human variability.

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Antimicrobial Agents and Chemotherapy

If the 1940's and 1950's were considered the "age of the microbiologist" in antimicrobial agents, it is obvious that the 1960's mark the beginning of the "age of the chemist." This is the conclusion to be drawn from the sessions of the Sixth Interscience Conference on Antimicrobial Agents and Chemotherapy which was held 26–28 October 1966 in Philadelphia. Over 1200 clinicians, microbiologists, chemists, pharmacologists, and other specialists including representatives from 15 foreign countries attended the sessions.

Perhaps the most interesting theme which was repeated throughout the meeting was the successes now being realized by chemists who are "manipulating" various antibiotic structures to produce chemotherapeutic agents with more desirable and useful properties than found in the parent compound. K. E. Price (Bristol Laboratories), examined the relationship of structures of more than 5000 semisynthetic penicillins (for example, penicillins which have been chemically modified) to their biological activities, and noted recent advances—increased oral absorption, acid stability, resistance to penicillinase (an enzyme inactivating penicillins), and higher blood levels. A number of clinical reports on hetacillin supplemented his remarks and emphasized the practical value of these laboratory-determined attributes. Hetacillin has all the properties of the widely used ampicillin and gives higher blood levels and perhaps fewer side effects than ampicillin.

E. Flynn (Eli Lilly and Co.) in discussing some of the successes and failures in manipulating the structure of cephalosporin C pointed out that cephaloglycin and related compounds are absorbed orally (cephalosporin C is not); have better chemical and physiological stability than the parent compound; and are useful against a variety of infections caused by Gram-negative microorganisms. However, these semisynthetic cephalosporins are inactivated by a variety of enzymes (as discussed by Mrs. C. H. O'Callaghan and associates, Glaxo Research Ltd.). The chemist still has to overcome these natural defenses found in certain infectious organisms. Synergism between ampicillin and a variety of other semisynthetic penicillins, including cloxacillin and oxacillin, was reported by J. A. Bach (Bristol Laboratories) in laboratory studies and by L. D. Sabath (Boston City Hospital) in clinical studies. The future objectives for the semisynthetic penicillins and cephalosporins should include elimination of the allergenicity since, according to a panel (L. E. Cluff, W. M. M. Kirby, and J. E. Johnson) cross-allergenicity occurs between all of the semisynthetic penicillins, and some cases of cross-allergenicity have been reported between penicillins and cephalosporins.

The best example of the success of the chemist in "improving" an antibiotic was shown by P. Sensi and S. Füresz (Lepetit, S.p.A., Milan, Italy). They have been successful in broadening the antibacterial spectrum of rifamycin and preparing derivatives which are orally absorbed. Rifaldazine (*N*-amino-*N'*-methylpiperazine of 3-formyl-rifamycin SV) has been absorbed orally; promising results have been obtained in clinical trials in patients suffering from pneumonias, urinary infections, tuberculosis, and osteomyelitis. In this work the chemist has expanded the spectrum of the antibiotic to include Gram-negative organisms; improved the chemical stability of the compound; and prepared a compound which is orally absorbed (whereas the parent was not).

Full exploitation of the chemical manipulation of the lincomycin molecule has not yet been achieved according to B. J. Magerlein (The Upjohn Co.), even though success in increasing the specific activity of the antibiotic and broadening its antibiotic spectrum has been noted. The lincomycin molecule can be modified in a number of areas and retain antibacterial activity. Introduction of halogens resulted in higher specific activity.

The value of chemical modification of the tetracyclines was evident in the studies on doxycycline (α-6-deoxy-5-oxytetracycline), which has been extensively investigated in the clinic and found to give rise to fewer side effects and higher blood levels than oxytetracycline. Preliminary studies with minocycline (7-methylamino-6-demethyl-6-deoxytetracycline) by G. S. Redin (Lederle Laboratories) show that it has a higher specific activity than any other reported tetracycline and a broader antibiotic spectrum than others of the tetracycline group in both in vivo and in vitro experiments.

Other topics of general interest included a symposium on nonpharmaceutical uses of antibiotics, which was organized by D. Pramer (Rutgers University) as a cooperative effort between the Society for Industrial Microbiology and the American Society for Microbiology. Among the papers included was a discussion of the practical usefulness of antimycin A as a teleocidal substance, and Claude Vezina (Ayerst Laboratories, Montreal) predicted its early use in removing unwanted fish from various ponds and lakes.

Most of the papers presented at this conference will appear in *Antimicrobial Agents and Chemotherapy–1966*, which will be published in June 1967 by the American Society for Microbiology. Plans for the 1967 Interscience Conference on Antimicrobial Agents and Chemotherapy are already underway. This conference will be held 25–27 October 1967 in the Edgewater Beach Hotel, Chicago. Further information on the meeting and abstract forms can be obtained from R. W. Sarber, American Society for Microbiology, 115 Huron View Boulevard, Ann Arbor, Michigan 48103.

This meeting is sponsored annually by the American Society for Microbiology. The program is organized with the assistance and cooperation of the Infectious Diseases Society of America.

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