

with P.A.S., effectively reduces the incidence of complications and of post-operative spread of disease, and should always be given as a cover for operation. Most surgeons advise a period of three to six months' rest in bed under sanatorium conditions after the operation; the principal reason for this is to ensure healing of the residual disease. Perhaps it will later be found that in strictly localized lesions this can be dispensed with. It is hoped and expected that one of the advantages of resection as a method of therapy is that it will markedly shorten the total period of treatment. Surgeons have not yet discovered the best way of dealing with the dead space left after resection. As there are so often small healed areas of disease in the remaining lung, its overstretching by compensatory emphysema should be avoided, since this might cause a flare-up. Sometimes, especially after pneumonectomy, foreign bodies such as plastic spheres have been left in the space,⁵ but more often it is closed by thoracoplasty. This may be combined with division or crush of the phrenic nerve and pneumoperitoneum, which is best induced before the operation. After lobectomy the thoracoplasty may be less extensive, or unnecessary, and in most cases of segmental resection the space is small and no special measures are needed to close it. Thoracoplasty is usually done two or more weeks after the resection, but recently it has been shown that it can be performed at the same time, as described by Waddington,⁶ and by Cruickshank and El Papamichael,⁷ without appreciably increasing the risk.

Serious complications of lung resection for pulmonary tuberculosis are bronchial fistula and empyema, which often occur together and may be due to tuberculous or to secondary infection. Spread or reactivation of disease is less common. No series of patients have yet been followed for very long. Bickford and his colleagues have reported on nearly 100 cases, observed for a year or longer: two of the patients died while under observation, but a positive sputum had become negative in 87% of the survivors. Day and his colleagues⁸ treated 202 patients by resection; 25 died, but of the remainder 85% had negative sputum. Similar figures have been reported by other American authors.

HOUSE DUST AS AN ALLERGEN

It is surprising that more effort is not being devoted to the study of allergy, for according to one authority "allergic diseases, with a prevalence of 1,337 per 100,000 population, are commoner than gastric, duodenal, peptic, and anastomotic ulcers combined, than all forms of anaemia, between three and four times

as common as angina and valvular heart disease combined, and rheumatoid arthritis, osteoarthritis, and spondylitis combined."¹ Unfortunately the techniques used by earlier investigators were qualitative only, and the initial enthusiasm surrounding the discovery of so striking a phenomenon led during the immediately succeeding years to much uncritical work and earned for the subject a certain degree of disrepute in this country. Despite the unpopularity of allergy as a subject of investigation, certain outstanding investigators have during the last two or three decades added greatly to our knowledge of the fundamental principles governing allergic responses. A new era seems now to be dawning in this field of research, owing largely to the application of the techniques of microchemistry and biophysics, which render possible investigations upon a quantitative basis.² The importance of the working hypothesis in the advancement of medical science still remains, as Professor J. R. Squire ably demonstrates in the paper published in the opening pages of this issue, but the validity or otherwise of hypotheses in the realm of allergy can be more readily tested when a quantitative approach can be made.

It appears evident at once that there is no satisfactory method for the standardization of the commonly occurring allergens (such as pollens, dander, or dusts), since there is no relation between potency as tested on the patient and either weight or content of total nitrogen or protein nitrogen. The present stage of development is similar to that reached in the early days of vitamin research, and the only possible recourse seems to be to an arbitrary standard preparation of the material in question, but with the added difficulty that the human subject should really be used for comparison—though multiple sensitivity is just as likely to occur in such a subject as did multiple deficiencies in the animals used for vitamin assay. There is still a great need for further purification and characterization of the known common allergens.

House dust is one of the commoner causes of specific sensitization, estimates of its incidence in asthmatics having varied between 33 and 79%.³ Assessment of the exact incidence of hypersensitization is made difficult by the possible occurrence of weak positive reactions due either to low-grade sensitivity in patients without clinical symptoms or to non-specific irritant material. By its very nature house dust might be expected to contain a great

¹ Williams, D. A., *1st International Congress of the International Association of Allergists*, Zurich, September 23-29, 1951.

² Rimington, C., *ibid.*

³ — in H. A. Abramson's *Somatic and Psychiatric Treatment of Asthma*, 1951, Baltimore.

⁴ *Brit. J. exp. Path.*, 1947, 28, 309.

⁵ *Ibid.*, 1947, 28, 326.

⁶ *Ann. Intern. Med.*, 1937, 11, 505.

⁷ *1st International Congress of the International Association of Allergists*, Zurich, September 23-29, 1951.

⁸ *Ibid.*

variety of allergens, yet most investigators have been struck by the rather highly specific character of house-dust sensitivity. Rimington, Stillwell, and Maunsell,⁴ by purifying the active material, obtained a product which proved to be a polypeptide-like unit combined with a polysaccharide, or a complex of such chemically similar materials. Biological activity was shown to reside in the nitrogen-containing portion of the molecule, since controlled degradation removed the greater part of the carbohydrate without decrease in potency. Acid hydrolysis liberated several common amino-acids, but the basic and aromatic amino-acids were notably deficient. The purified allergen did not give the usual protein reactions, and it is noteworthy that solutions of it may be boiled without loss of activity. It would appear, like the blood group specific substances, to belong to a class of biochemical materials, so far little investigated, in which amino-acids and carbohydrates are associated in a large complex molecule. From three different moulds (*Caldariomyces fumago*, *Penicillium roqueforti*, and *P. tardum*) grown in pure culture the same workers⁵ obtained products similar in composition to the house-dust allergen and reacting specifically in hypersensitive persons. Further research upon these mucor or glycoprotein-like materials is urgently required.

Three principal hypotheses have been put forward to explain the presence of the specific material in house dust: first, that it is derived from the air-borne spores of common moulds; secondly, that it arises from the disintegration of textile fibres, such as cotton, under physical influences (light, heat, etc.); and, thirdly, that it is formed as a result of the action of micro-organisms upon fibres or furnishing materials and is not present in either separately. A brief examination of these possibilities may be of interest. Much work has been devoted to the identification of moulds inside and outside houses and to the testing of dust-sensitive patients with mould extracts, but little support has been gained for the first hypothesis—there is in general a lack of quantitative relationship between dust and mould sensitivity. Similarly the support for the second hypothesis is but meagre. Extracts of "old" fibres often cause large reactions, but in an experiment by Wagner and Rackemann,⁶ in which new kapok was "aged" under sterile conditions, no active material was produced in six months. Subsequent spraying with moulds (themselves incapable of giving positive skin reactions) from old kapok quickly led to the formation in the kapok of typical biologically active material. Such a result supports the third hypothesis. Still further support for this possible origin of the house-dust allergen is afforded by Maunsell's⁷ investigations of the

situation of the homes (in the London area) of dust-sensitive patients with bronchial asthma or perennial rhinitis. Thirty-eight out of 49 patients lived, at the onset of their disease, in houses within 180 yards from open or underground waterways, as against 17 out of 49 strictly comparable controls. Though many of London's small waterways have for long been enclosed in concrete sewers, the clay in their neighbourhood probably has a higher humidity than elsewhere, because rain water over a large area must still gravitate to the regions occupied by these drains. Moulds probably grow more freely in houses built on such damp ground than in houses further from the watercourses. Harsh⁸ has pointed out that the warm, humid coast of California, with its low pollen and fungus counts, constitutes an ideal natural laboratory for the study of the effect of climate in allergy, especially since more than 75% of the adult population has lived previously in drier inland areas. As a result of his observation of patients with respiratory allergic diseases who are sensitive to house dust or pollen he concluded that the effect of a damp climate may not be due to external operation of the climate *per se* but rather to an effect of the humidity in potentiating the allergen.

At this stage it would be well to recall Professor Squire's analysis of the place of hypothesis in the advancement of medical science. The problem of house-dust sensitivity is difficult, and the hypotheses briefly referred to above are provocative; but it will be interesting to see how they bear up under further well-directed experimental assault.

SPECIFIC LANGUAGE DISABILITY

The occurrence of specific language disabilities in children of normal intelligence has long been recognized. Under the rubric of "developmental aphasia" a variety of clinical pictures have been described in which the main feature is "lack of facility in the various aspects of handling words: reading, spelling, talking, and writing." It is rare, however, for all uses of language to be affected equally, and severe retardation in reading or spelling (or both) without any difficulty with speech is quite common. Curiously enough, calculation is seldom affected. The incidence of such defects in the general population has been placed as high as 10%, and there is some reason to believe that they are commoner among boys than girls. The causes and treatment of specific language defects should be more intensively studied, for educational reasons as well as for their relevance to the theory of aphasia. Gallacher,¹ for instance, feels that school medical officers and others concerned with the management of retarded children should give fuller recognition to the

¹ *N. Engl. J. Med.*, 1950, 242, 436.

² *Acta psychiat., Kbh.*, 1950, Suppl. 65.