predators which receive the brunt of the attack, leaving the pests to escape. The misuse of D.D.T. and benzene hexachloride has caused greater destruction of the black-kneed capsid than of the red spider of orchards, its natural foe. The ladybird, predator on the aphis, succumbs readily to the effects of nicotine used to destroy the aphis. Growth regulating substances easily destroy plantains in lawns, but leave pearlwort to flourish under less competitive conditions. The weeds of the hedge-rows are invading the fields. And if it be true that the change from basin to perennial irrigation has increased crop yield, it is also true that it has caused a "considerable increase in the incidence and intensity of bilharziasis whenever that infection existed or was introduced by outside labourers." Russell Pasha has associated the dissemination of this disease in Egypt with the spread of drug addiction to such an extent, indeed, that the whole nation all but perished in wholesale moral, spiritual and physical degradation.

On these wider issues the G.A.S. gives no guidance at present, but may easily be pressed to extend its scope. Nevertheless, whether phenomena can be better explained by the metaphysical axiom of internal relations or by the scientific concept of biological inter-relatedness, Medicine must not be tied to a dialectic but use it as it is empirically profitable. Otherwise, the patient will be called upon to justify the hypothesis. In a recent broadcast, Lord Samuel characterised Hegelianism as philosophic charlatanism, because it was based on certain assumptions; the G.A.S. is also based on a priori assumptions. A light which seems to burn with such brightness must be carefully examined lest we fall into error:

Great Empedocles, that ardent soul, Leapt into Etna, and was roasted whole.

The Dale Report

The Dale Committee's report was a surprise. Unlike many Government committees of recent years, it has dealt in practicalities rather than in planning. Devotees of planning have criticised it but in whatever wishful thinking they might indulge, the fact remains that neither men, money nor knowledge are available to set up a big superstructure of medical services. Industry's function is to produce and to industry, the importance of medicine is indirect. Exposure to industrial hazards will cause accidents and disease, but the major effect of industrial circumstances on the health of the nation is caused by maladjustment to social conditions. This the Committee recognises when it points out that the chief function of industrial health services is to maintain morale. The Committee places emphasis on the fact that the first function of industrial medicine is advice to management. After all, every successful business organisation is a success solely because it is a successful society and that is what planners are apt to forget.

Large industrial health services imposed from the outside on industry will be valueless. What can enhance the health of all persons engaged in industry (and increase efficiency) is an industrial health service arising within and as part of industry. Even "The Times" fell into this error when it advocated the Dale Committee should have paid more attention to the report of the Committee on Preventive and Social Medicine of the Royal College of Physicians. In any case, this report is six years out of date and makes no attempt to come to grips with the very practical attitude needed in day-to-day work in industry.

The report advocates the slow evolution of industrial health services and states that there is plenty of room for experiment in the proper form of industrial health services for small factories. Opinion may differ on the value and place of the doctors and nurses in small factories. Without adequate experiment, sound planning is impossible.

Co-ordination of advice given by government departments is needed and for this the Committee recommends an advisory committee. This is inevitable unless the structure of the governmental machinery is to be altered as, historically, several ministries have contact with work. Government departments which are employers (e.g. Ministry of Supply) are to be treated as all other employers and have no special place on the co-ordinating committee. The recommendation that the Chairman should be "neutral" reflects the almost impossible task set the Dale Committee in resolving conflict between government departments. By and large, the Dale Committee has succeeded and is to be congratulated on avoiding easy platitudes. Even if its report is remembered for nothing else, it contains a valuable definition of industrial medicine and statement of the present services available to workers in industry.
The one thing that will bring industrial medicine ill repute quicker than anything else is the extravagant and wasteful use of men and money in pursuit of some hypothetical ideal. Though the Prime Minister has lifted his ban (which itself was interesting as the first time a sanction has been set against an employer increasing his standard of care of his employees) and though the Committee has said properly conducted industrial health services are beneficial to the nation, it has also said “you have been warned.”

**The General Adaptation Syndrome and A.C.T.H. Therapy**

**BY**

ALUN R. WILLIAMS

HANS SELYE, in his recent Heberden Oration, introduced a new theory, which if correct, will have a very far reaching effect on medicine. His conception explains many conditions which hitherto have been regarded as of unknown aetiology. It also explains lines of therapy which have been considered to be empirical, and puts them on a rational basis.

The theory has not met with universal acceptance, and in some quarters has been severely criticised. Thus one author recalls that in his student days the theory of “Focal Sepsis” accounted for all bodily ills, and that a generation of edentulous folk arose as a result of this theory. Another author compares it with Galen’s views in the Middle Ages and suggests that if Selye’s theory is accepted in its entirety, medicine will rapidly revert to the state of the Middle Ages.

The theory may be wide in its concept and details arising from it discarded. Further work may modify it. Nevertheless the conception of the G.A.S. is a sound one, and practical results of its application are likely to ensue in the not very distant future. One must be guarded as to its practical therapy as various difficulties are apparent in the use of endocrines believed to modify the Adaptation Syndrome. The difficulties with Cortisone and A.C.T.H. therapy will be discussed later.

Selye originally published his early work leading up to the theory of the G.A.S. thirteen years ago, and in 1946 published his theory of the General Adaptation Syndrome. His Heberden Oration in London this year was a reiteration, with some extension of his original conception. Work on the adrenal steroids was, however, being done in widely different areas. Thus Kendall in the Mayo Clinic isolated Cortisone (Compound “E”) in 1941. Reichstein in Basle had done earlier work which led to the discovery of Cortisone in 1937. These two workers along with Hench of the Mayo Clinic, as you gentlemen are aware, have been jointly awarded this year’s Nobel Prize for Medicine.

Selye considers that his theory is merely the interpretation of various experimental work which has been done in the past 40 years. Thus he points out that the most ancient observation along the line of the G.A.S. was on traumatic shock, which is a manifestation of the “Alarm” reaction. The various experimental manifestations of shock and the adaptation of the body to various stimuli have been incorporated by Selye, and this theory he has termed: The General Adaptation Syndrome. The full application of this theory to clinical medicine is far from being finally settled. Selye himself remarks that so wide are its implications that it may touch on “Life itself,” and thus may never be completely understood.

The theory has arisen from the view that certain physiological mechanisms in which endocrines play a prominent part, help to raise resistance to damage as such, irrespective of the specific nature of the damaging agent. At this stage it is necessary to define the General Adaptation Syndrome.

**Definition:**

The G.A.S. is the sum of all non-specific reactions of the body which ensue on long continued exposure to stress. It is different from specific adaptation reactions, e.g., the development of musculature following prolonged physical exercise.

In the course of Selye’s work he was struck by the fact that certain manifestations were always the same irrespective of the specific nature of the eliciting damaging agent. These manifestations or reactions of the body he calls:

1. The alarm reaction.
2. The stage of resistance.
3. The stage of exhaustion.

*Read before a meeting of the Tees-Side Group on 15th November, 1950.*