administered in adequate doses by the mouth, is capable of destroying haemolytic streptococci in the blood stream. This astonishing action, fully attested by both laboratory experiment and clinical experience, stands in strong contrast to that of every reagent previously employed for this purpose. The folly and futility of injecting intravenously such reagents as eusol and mercury salts are now generally recognized. Mercurochrome had a vogue for this purpose, in spite of the repeated demonstration that pyogenic cocci would actually grow in blood containing this drug in a concentration hundreds of times greater than can be attained therapeutically in the circulation. Other, and otherwise more efficient, mercury compounds are useless for this purpose. A few dyes might be expected to exert some effect, but they are probably eliminated too rapidly to attain it: one clue to the success of sulphanilamide is that it remains in maximal concentration in the blood for six hours. It is to be hoped that the discovery of this drug will banish all substances previously used as circulatory antiseptics into the limbo of forgotten things.

Urinary Antiseptics.—Here again the advent first of mandelic acid and then of sulphanilamide has largely superseded previous treatments of doubtful efficiency. Two other antiseptics have a demonstrable action in the urinary tract: hexamine, which is dependent, like mandelic acid, on the maintenance of a low pH; and hexyl-resorcinol, the behaviour of which is unaccountably erratic.

Intestinal Antiseptics.—The coal-tar preparations which are sometimes given to colostomy patients and in various other circumstances in order to suppress bacterial activity in the lower bowel do not reduce the bacterial population of the colon, and have indeed never been shown to reach it. So far as we are aware an antiseptic that is neither absorbed from the bowel nor rendered inert by chemical combination with its contents has yet to be found.

Biliary Antiseptics.—We are not aware of a convincing demonstration that any drug acts as a biliary antiseptic. Hexamine has been much lauded for this purpose; this substance is not itself bactericidal at all, and acts only by liberating formaldehyde under the influence of acid. A degree of acidity adequate for this effect exists nowhere in the body except in the stomach and the urinary tract. For the same reason hexamine is quite inert in the central nervous system.

Conclusion

It has been possible in the present review to deal only with better-known antiseptics and their commoner and more important uses. Essential oils, boric and other acids, soaps, metals, and even the excrement of maggots have been used for their antiseptic properties. For each of the proprietary antiseptics of coal-tar origin which we have named there are a dozen others, similar in composition but in some cases less familiar and unsupported by the same variety of testimony to their value. Since no authority in this country has undertaken the task of examining and adjudicating upon preparations of this kind the medical profession in general has no means other than clinical trial of knowing what their merits are. In this as in other directions which we have indicated the intelligent use of antiseptics is rendered difficult by lack of information. Order is more likely to be brought into the present chaos of this subject if it is more often approached in the manner we have attempted here—that of inquiring into the evidence that the properties of an antiseptic are suited to a particular task.

NATIONAL FITNESS AND THE CARE OF THE INSANE

BY

SIR ROBERT ARMSTRONG-JONES, M.D.,
D.Sc., F.R.C.P.

A striking demonstration of physical exercises combined with musical rhythm was recently given by the Margaret Morris Society before an audience of teachers, nurses, representatives of the Eugenics Society, and medical men, some of the last-named associated with the care and treatment of the insane and coming from a distance so far from London as Cumberland. This most interesting exposition of the value of graded muscular movements, lasting nearly two hours, was presented on December 1 at 31, Cromwell Road, S.W.7, the London Institute of the movement. It was fully explained by Miss Margaret Morris and her staff, who had already directed their remedial treatment classes in several mental hospitals and private homes for the care and treatment of the insane. The attractive demonstration included the use of general and special muscular movements, easy of execution and pleasing to watch, by which to secure the balance of the body, graceful postures, and mental relaxation. They taught the performance of physiological muscular contractions, which were carried out without effort, and a normal poise was maintained which is deplorably wanting in all mental cases. Recently the advocacy of physical fitness has been taken up with great earnestness by the Government in pressing forward the scheme for national fitness. Local authorities on the one hand and a great array of voluntary workers on the other have been engaged in rousing public interest in activities for an improvement in the mental and physical condition of the people, but in no section is this more necessary than in the population of our mental hospitals.

Members of Parliament who desire to urge primarily the question of nutrition—free food and milk—need have no anxiety to-day about the food provided in the mental hospitals, for in these the dietary has been fully considered by the responsible local authorities. During the last twenty years the maintenance rate in the public mental hospitals has been more than doubled, and the nutrition of those under treatment appears to be satisfactory; but the general improvement in bodily conditions through the judicious use of muscular exercise and movements has perhaps not received the special attention required as an aid in remedial treatment. It is not yet realized that the Lunacy Act, 1930, makes it possible to receive into mental hospitals cases in their early stages voluntarily—that is, without the doctor's certificate of insanity. Naturally it is obligatory upon those responsible for the treatment—apart from the question of public duty, personal responsibility, or humanity—to do their very best towards the patient's rehabilitation and recovery.

The Numbers of Mental Patients

The question is a very big one, for in the year 1936—the last for which we have any record—there were under care in our mental hospitals over 130,000 persons suffering from mental disease. Of these more than 25,000 were new cases, a fourth of them—upwards of 6,000—being voluntary patients. Also, of the 82,000 cases of mental deficiency 4,000 were new cases admitted during 1936 (although none of these was a voluntary case). Every effort should be (and is) made for their mental improvement and restoration—quite apart from the urge arising out of a fellow feeling and sympathy, which their condition entitles them to receive.

It is not criticism of the past we require but suggestions for the future; we should begin, therefore, by asking, "What sort of cases are likely to improve by physical treatment?"—that is, by muscular movements, bodily

training, physical exercise, rhythmic drills, and mild athletics. My answer is, All young persons, including nearly 7,000 cases under 16 detained as mentally defective in institutions; but it is not for these alone that this treatment appears to be applicable. There are, one regrets to know, thousands of young persons in our mental hospitals under care and control as mentally diseased and unsound who were once in full possession of their mental faculties, but who have succumbed under the stress and strain of civilization.

The Value of Muscular Movements in Mental Disorder

It is for this body of mentally ill people that I venture to think muscular movements under skilled direction would provide remedial treatment. The question as to the great value of muscular movements for functional mental disorder has always been answered in the affirmative. We know too well the relation between the mind and the body. We see the effect of delirium, of high temperatures, of the toxin of fevers, of drugs, of alcohol, and of narcotics upon the mind; and, also, we know the effect of the mind upon the body—how bad news reacts on the body and how mental shocks affect digestion, sleep, and bodily movements. We know how from their earliest days healthy children depend upon proper outlets of muscular activity for their growth and development, as well as happiness. We have only to watch the folk dances in rural districts at home and abroad to see the joy which young and old experience, when suitably dressed, in performing the stately pavan, the minuet, the gavotte, and appropriate folk dances.

The properly organized nursery of to-day contains many objects used in games to encourage the instinct of movement such as running, jumping, marching, singing, kicking, and gesticulating; and the backward child can often be roused by an interest in handling, following, marching, or walking with rhythm, not to mention seeing and hearing. In mental breakdown, affection, and disease, the most common, even universal, mental symptom is failure to fix the attention, to discriminate, and to remember things. In order to secure that interest we must endeavour to kindle an activity and try to adapt this for useful purposes such as handicraft, weaving, knitting, artificial-flower making, mat-making, tailoring, shoe-making, for indoor exercise; and gardening, looking after animals (rabbits, dogs, and poultry) for outdoor work.

Effects of Muscular Exercise

It is acknowledged by all physiologists, doctors, and teachers that *muscular exercise*:

1. Increases the work of the lungs, augmenting breathing action, letting in more oxygen, and getting rid of carbon dioxide.
2. Quickens the heart and circulation, making elimination more effective through the lungs and skin.
3. Raises the body heat by increased tissue changes—metabolism.
4. Withdraws blood from the brain and sends more to the muscles: thus exercise favours healthy action.
5. Provides a healthy change which gives pleasure, the mind being soothed and calmed and also invigorated.
6. Interests the child, who remembers the exercises and enjoys the pleasure. Associative memory is rekindled.

There are five senses (and indeed many more) which are avenues to the human mind, but muscular feelings are the first and most fundamental of the constituents. The muscular sense precedes all the other senses. Muscular contractions are an essential element of the will, and as these are pleasurable they tend to reawaken resolution and decision and to strengthen the will power. Muscular efforts most often cease in illness or after fatigue, and the limpness of an ill child is in marked contrast to the activity of a healthy one. If health is to be preserved the vigour

and nutrition of the muscular system must be exercised, practised, and maintained. The experience of Dr. Elizabeth Casson, medical director of Dorset House School of Occupational Therapy, confirmed mine when I was the physician in care of mentally lowered children at Earlswood, and her good work is appraised, as also is the Margaret Morris Movement, on page 76 of the Board of Control report for 1936, just issued.

I think this movement should provide one of the most successful remedial treatments in securing the control of the attention and in mental restoration. It helps the power and grasp of the mind by practice in obeying commands. It strengthens the will. It excites curiosity, imitation, interest, and memory, which in cases of mental derangement are the fundamental elements in the rekindling and rousing of intelligence. It was warmly supported by Dr. Stella Churchill. I need only add that this work receives the full approval of the National Advisory Council on Physical Training as well as of the Amateur Athletic Association and many local authorities.

I have presumed to pen these notes in order to emphasize the value of properly graded muscular exercises as a help in the remedial care and treatment of mental cases—*young and old*.

Nova et Vetera

THE MEDICAL LIFE OF BOSSUET

Dr. L. Brodier, the distinguished president of the French Society of the History of Medicine, contributes to a recent issue of its *Bulletin*¹ an article on the medical life of the eloquent preacher known as the "Eagle of Meaux." Jacques Bénigne Bossuet was born at Dijon on September 27, 1627, the seventh child of a family of nine. He appears to have been free from disease until the age of 49, when he began to suffer from attacks of malaria, which recurred during the next three years but were cured by cinchona, then known by the name of "Jesuits' powder." For the next twenty years he enjoyed perfect health, and then at the age of 72 contracted eczema, which lasted for more than two months and was attributed by his doctors to fasting during Lent. The following year he developed symptoms of cholecystitis. Fagon, the celebrated physician to Louis XIV, prescribed bleeding—which was performed by Dionis, senior surgeon to the Duchess of Burgundy—daily enemata, and a diet of soup and eggs. From this time until his death Bossuet became subject to attacks of diarrhoea sometimes accompanied by bilious vomiting and constipation which necessitated numerous purgatives. In 1701, at the age of 74, Bossuet first noticed that his urine was tinged with blood, though he had no pain in the lumbar region or bladder. His regular medical attendant, Denis Dodart, physician to the Princesse de Conti and her children, recommended a season at Forges-les-Eaux, a spa much in vogue for the treatment of stone and urinary diseases, but this suggestion did not meet with Fagon's approval and was not carried out. The diagnosis of stone in the bladder made by Dodart was confirmed by the expulsion of a small calculus, and an infusion of tea, which had recently been introduced into France and was reported to prevent the formation of vesical calculi, was ordered to be taken every morning. During the next two years and eight months, ending with his death at the age of 76, Bossuet suffered from acute and subacute attacks of calculus cystitis. An operation, to be performed by the celebrated lithotomist Georges Mareschal, was discussed, but decided against. The necropsy showed calcification of the gall-bladder, hydrocele, and a stone almost as large as an egg in the bladder, which was ulcerated and gangrenous.

¹ *Bull. Soc. franç. Hist. Méd.*, 1937, 31, 145.