ABSTRACTS

This section of the Annals is published in collaboration with the two abstracting Journals, Abstracts of World Medicine, and Ophthalmic Literature, published by the British Medical Association.

The abstracts selected for this Journal are divided into the following sections: Acute Rheumatism; Chronic Articular Rheumatism (Rheumatoid Arthritis, Osteo-Arthritis, Spondylitis, Miscellaneous); Disk Syndrome; Gout; Pararheumatic (Collagen) Diseases; Non-Articular Rheumatism; General Pathology; ACTH, Cortisone, and other Steroids; Other General Subjects. At the end of each section is a list of titles of articles noted but not abstracted. Not all sections may be represented in any one issue.

The section "ACTH, Cortisone, and other Steroids" includes abstracts and titles of articles dealing with research into the scope and modus operandi of steroid therapy.

Acute Rheumatism


A previous investigation (Ann. intern. Med., 1955, 42, 607) had shown that the ratio of rheumatic carditis to total heart disease (r/t index) was 0.5990 for hospitalized patients in Mexico City, with a temperate climate, compared with 0.0967 for some tropical Mexican areas. The authors examined two groups of students, one from an area with a tropical and rainy climate and one from Mexico City with a more temperate environment. Throat swabs were plated on blood agar and colonies of ß-haemolytic streptococci were grouped.

There was little difference in the incidence of Group-A ß-haemolytic streptococci in the two groups (3 in 102 cases from the tropical region and 1 in 100 from the temperate climate). Nor did antistreptolysin-O titres show a significant difference; in fact, 55 per cent. of students in the tropical climate had a titre above 200 compared with 36 per cent. in the temperate region. Despite this, rheumatic fever was not found in the tropical group, but occurred in three out of 340 cases from the temperate area. [It is not clear how comparable these two groups were.] The authors suggest that a tropical climate affects the response of the host rather than the rheumatogenic agent.

E. G. L. Bywaters.


For the last 2 years all children with rheumatic fever admitted to the clinic of the National Cardiological Institute, Mexico, have been vigorously treated with large amounts of intramuscular crystalline and procaine penicillin initially for 10 days, followed by depot penicillin every 10 days thereafter. In addition tonsillectomy and other surgical procedures were performed when clinically indicated, or when streptococci failed to be eradicated. The authors now report a retrospective study comparing the clinical course of the fifty children treated in this manner (Group 1) with the last fifty children treated before this antistreptococcal programme was established (Group 2). The two groups were well matched in regard to age, sex, number of first attacks, evidence of preceding streptococcal infection, duration of disease before admission, and initial severity of the disease. The last was judged on a composite grading system which took into account the visceral manifestations of rheumatic fever, other clinical manifestations of the disease, and also the results of a number of laboratory investigations.

In Group 1, the highest antistreptolysin-O titre (AS-O) was over 200 in 94 per cent. of the patients and fell to normal in 4 months in 52 per cent. In 33 of these tonsillectomy was performed and was followed by a transitory rise in the AS-O titre in nine. These nine were the only patients showing a secondary rise in AS-O titre, and the authors regard them as being probably the only cases in which tonsillectomy for the eradication of streptococci was required; comparable data for Group 2 were not available. The clinical outcome of the rheumatic fever in the two groups respectively was as follows: rheumatic process inactive within 4 months, 42 and 22 per cent.; within 5 to 6 months, 42 and 24 per cent.; within 7 to 9 months, 0 and 12 per cent. There were four deaths in Group 1 and twelve in Group 2. This more favourable outcome in Group 1 was supported by a radiological study of the heart size, which gave the following results: further enlargement, Group 1, nil, Group 2, 16 per cent.; smaller heart size 70 and 44 per cent. respectively. The figures for recovery from heart failure were also more satisfactory in Group 1 [but these are difficult to evaluate, as the results are given in percentages of the whole group and the actual numbers of patients in the two groups with heart failure before treatment are not given].

The authors conclude that adequate treatment of streptococcal infections shortens the duration of attacks and improves the outcome in rheumatic fever.

[This conclusion cannot logically be drawn from the
evidence presented, since alterations in the nature of the
disease, or other factors, cannot be excluded as possible
causes of the differences found between groups in this
type of comparison. Nevertheless, it seems a reasonable
working hypothesis.] Allan St. J. Dixon.

C-reactive Proteins in Rheumatic Fever. (La C-reactive
protéine dans le rhumatisme articulaire aigu.) Rahaman,
33, 2179. 5 figs, 46 refs.

The authors studied 52 cases of rheumatic fever and
thirteen of other similar diseases at the Hôpital des
Enfants-Malades, Paris, comparing the erythrocyte sedi-
mentation rate (E.S.R.) (Wintrobe method) and the
serum mucoprotein (Wintzer method) and C-reactive
protein content (precipitin method described by Anderson
and McCarty) before and during treatment with cortisone
acetate or prednisone. After a reduction in the steroid
dosage, aspirin was used, and during this period the
C-reactive protein, which had disappeared rapidly with
hormone treatment, reappeared in the blood in fifteen
cases out of the 52 with rheumatic fever, together some-
times with a return of symptoms, sometimes with an
increase in E.S.R. Four charts from individual cases
and a figure summarizing all the results show that the
serum C-reactive protein content falls rapidly after the
start of hormone treatment; the E.S.R. falls less slowly
and the serum mucoprotein content only very slowly.

The authors conclude that each of these tests is of
value in following the course of rheumatic activity.
E. G. L. Bywaters.

Prophylaxis of Relapse of Rheumatic Fever. Results in
377 Cases followed-up for 5 Years. (Prophylaxie des
rechutes de rhumatisme articulaire aigu.) Labesse, J.,
Dagonet, Y., Fidelle, J., Faure, A., Debetz, J., and
1 fig., bibl.

Routine chemoprophylaxis with sulphasalazine or oral
or intramuscular penicillin after an attack of rheumatic
fever was prescribed in 377 consecutive cases in children
admitted to the Clinique Medicale des Enfants, Paris,
between 1951 and 1956. They were followed for an
average of 2.3 years. Continuous prophylaxis was
maintained in 200 cases for an average period of 18
months, in 167 cases there were interruptions lasting up
to several years during an average observation period
of 37 months, and ten patients took no drugs (average
observation 36 months).

Previous authors have shown that chemoprophylaxis
with sulphonamides reduces the annual rate of relapse
by about 80 per cent. In this series there were only
four relapses in 117 patient-years of observation (3.4
per cent. per year) among those given 1 g. sulphasalazine
daily, a reduction of 83 per cent. Serious toxic com-
lications were rare and agranulocytosis was not seen.
The authors' experience with intermittent courses of oral
benzylpenicillin in high dosage was unfavourable. With
200,000 units daily, the relapse rate in 154 patient-years
was 3.9 per cent. per year (but some of the relapses
occurred when the patients forgot to take their tablets),
while with double the dose the annual relapse rate in
73 patient-years was 2.7 per cent. The total results
with continuous oral benzylpenicillin were thus much
the same as with sulphasalazine, but as oral penicillin
has no toxic side-effects it is preferable. With intra-
muscular benzathine penicillin in doses of 1-2 mega
units every 28 days, good blood levels were maintained.
The relapse rate was 1.5 per cent. per year for 199
patient-years of observation, but this method of prophy-
 laxis may cause hypersensitivity reactions. Oral phen-
 oxyemethylpenicillin ("penicillin V") is now being tested.

When there is a particular risk of streptococcal
infection, larger doses must be given. Of 72 instances
of pharyngitis in this series, 56 were proven to be due to
β-haemolytic streptococci, an incidence of 5.2 per cent.
per year in children receiving continuous prophylaxis
and 1.3 per cent. per year in children not given such
prophylaxis. Of nineteen children who received
"adequate" penicillin treatment for their streptococcal
infection, three (15 per cent.) suffered a relapse of
rheumatic fever, whereas of 53 who did not receive adequate
prophylaxis, 31 (58 per cent.) suffered a relapse.

John Lorber.

Hormone Treatment of Rheumatic Fever. Results in
387 Cases. (Traitemnt hormonal du rhumatisme
articulaire aigu. Resultats sur 387 cas.) Mozziconac-

Between 1951 and 1956, 387 children were treated with
adrenocortical hormones for rheumatic fever at the
Clinique Medicale des Enfants, Paris. The patients were
between 21/2 and 16 years of age, and the period of
observation ranged from 6 months to 6 years. In 207
cases the child was suffering a first attack.

Cortisone was given by mouth in daily doses of 100
to 300 mg., depending on the age of the child and the
speed with which the temperature became normal.
Treatment was continued for at least 15 days and was in
any case continued until the erythrocyte sedimentation
rate fell below 20 mm. (presumably in one hour—
method not stated). ACTH was used particularly at
the beginning of the treatment in about one-half the
dosage of cortisone. Enough aspirin was usually given
for 15 to 20 days after the hormone treatment to main-
tain a serum salicylate level of 35 mg. per 100 ml. Peni-
cillin was given continuously during the acute phase
of the disease and subsequently.

There were 28 severe cases with pancarditis and cardiac
failure, with seven deaths; eighteen of these 28 patients
had had previous attacks and only twelve of these
survived.

There were 221 children with carditis of moderate
degree (including 117 relapsed cases). They all re-
sponded rapidly to treatment in respect of fever, arthritis,
and skin lesions. In 155 cases the cardiac murmurs
which existed on admission persisted unchanged, 38
children who had only systolic murmurs lost these
during therapy, and 28 others lost some, but not all, of
the murmurs which they had on admission. Patients
in their first attack more often showed improvement in the cardiac condition than those in relapse. In three cases new murmurs developed during treatment and persisted subsequently.

138 children without apparent carditis all recovered without developing cardiac lesions.

During the follow-up 328 patients suffered no cardiac relapse, 215 of these being observed for 3 years or more. Fresh attacks occurred in 39 cases, and in some the cardiac signs deteriorated. Of nineteen children treated for a first attack not associated with carditis who suffered one or more relapses, only one subsequently developed carditis. The cardiac status of six children deteriorated during the follow-up without apparent further attacks of rheumatic fever. Fourteen children died either during treatment or subsequently, four of them with bacterial endocarditis.

These results are compared with those of the combined Anglo-American investigation (Brit. med. J., 1955, 1, 555; Abstracts of World Medicine, 1955, 18, 225).

The analysis and interpretation of the results and their comparison with the Anglo-American results are made difficult by the apparent lack of a master plan governing the trial and by incomplete definition of the various criteria adopted and of the different types and grades of carditis and cardiac signs (in particular, systolic murmurs). Moreover, the calculation of the relapse rate and assessment of the final cardiac state suffer from the lack of standardization of the period of observation, no distinction being made between patients observed for 6 months and those observed for 6 years.)

John Lorber.


This paper from La Rabida Sanitarium, Chicago, reports a study of the families of 314 patients admitted with rheumatic fever during a 5-year period (1950-54). [It is stated that at this hospital "the average annual admissions for rheumatic fever number approximately 250", but it is not made clear on what bases the selection of cases for this investigation was made.] Multiple hospital and home interviews were carried out, the presence of rheumatic fever in relatives being ascertained by physical examination, study of hospital records, or, in "well known cases", by parental statements.

A comparison of 157 families in which one or both of the parents had a history of rheumatic fever with 157 in which the parents were apparently unaffected showed that there was a past or present history of rheumatic fever in 49 per cent. of the children in the former group as against 38 per cent. in the latter; when the index cases were excluded the figures were 31 and 16 per cent. respectively. This familial factor was shown much more clearly when 21 "positive-parent" families with four or five children were compared with 21 "negative-parent" families of the same size. Excluding the index cases the proportions of children with rheumatic fever in these two groups were 30 and 11 per cent. respectively.

The effect of environment was shown by dividing the families into four groups on the basis of socio-economic, housing, and nutritional factors, those in the poorer groups containing a significantly higher proportion of children with rheumatic fever. However, in each of the groups there was a greater incidence in the families with a positive parental history.

The recessive-gene hypothesis of the transmission of susceptibility to rheumatic fever proposed by Wilson (1940) and Wilson and Schweitzer (1937, 1954) was tested by comparing the incidence of rheumatism in families of various mating types in which there was a positive rheumatic trait with that to be expected on the basis of the hypothesis. Agreement was obtained in families in which both parents had a positive personal or family history, but there was no agreement when only one parent had such a history.

E. G. L. Bywaters.


Previous publications by some of the same authors have shown that human serum fixes or binds histamine in vitro, thus reducing its effect on the guinea-pig intestine (Parrot and others, J. Physiol. (Paris), 1952, 44, 310), and that this property, which is enfeebled in various allergic states such as asthma, urticaria, eczema, and migraine, is also reduced in rheumatoid arthritis, gastro-duodenal ulcer, and tuberculosis (Parrot and Laborde, Presses méd., 1953, 61, 1267; Abstracts of World Medicine, 1954, 15, 388).

The present study from the Hôpital des Enfants-Malades and the Hôpital Boucicaut, Paris, describes the investigation of sixty patients with rheumatic fever or a past history of an attack. The histamine-fixing power of the serum was abnormally low in all of 35 cases in the early stages of the disease, whereas it was normal in all but one of 25 cases in the healed phase.

E. G. L. Bywaters.


The authors, using the Winzler method, have estimated the serum mucoprotein level in normal subjects and in patients with serious rheumatic states at the Hôpital des Enfants-Malades, Paris, and compared it with the erythrocyte sedimentation rate (E.S.R.) [presumably Westergren, but the method is not stated] and with the serum C-reactive protein content as an index of rheumatic activity.

In active rheumatic fever the serum mucoprotein level is increased, and it falls gradually with recovery. There is no very constant relation to the other two reactions, but in general an increased serum mucoprotein level is found over a longer period than the presence of C-reactive protein or a raised E.S.R.—in certain cases of chorea, Schönlein-Henoch purpura and erythema multi-
forme it was still increased although the other reactions were then normal. The authors conclude that this determination provides a simple and reliable method of following the evolution of rheumatic fever and a useful guide to treatment.  

E. G. L. Bywaters.

Prevention of Secondary Attacks of Rheumatic Fever.  

Ultramicro-Determination of Salicylates in Blood Serum.  

**Chronic Articular Rheumatism**  
(Rheumatoid Arthritis)


During the last few years the diagnosis of polyarteritis nodosa has been made clinically and confirmed historically in an increasing number of patients suffering from rheumatoid arthritis. It has been suggested that the introduction of steroid therapy may have affected the incidence of these vascular lesions. The records of all patients with rheumatoid arthritis who died from any cause and came to necropsy at the Mayo Clinic during 1954 have therefore been examined. They totalled 52, fourteen of whom had received cortisone and 38 had not. Of the former group, four (29 per cent) showed generalized vascular lesions of polyarteritis nodosa, whereas none of those who did not receive cortisone showed any such lesion.  

These findings suggest that certain susceptible patients with rheumatoid arthritis may develop diffuse arteritis following the administration of cortisone. The reason for this is not clear. No vascular lesions which could be considered specific for rheumatoid arthritis itself were found in any case.  

W. S. C. Copeman.

**Clinic and Prognosis of Rheumatoid Arthritis in Children.**  

The clinical course and prognosis in rheumatoid arthritis in children was studied at the University Hospital, Lund, Sweden, in 63 girls and 27 boys under the age of 15 years. In patients under the age of 12 years arthritis was first manifest in the large joints of the lower limbs; in older children the small joints were also attacked. Mono-arthritis was present in 27 cases, differential diagnosis in these cases being from tuberculosis arthritis. Contractures occurred more often in children than in adults. During the initial phase of the illness the temperature was subnormal. Haematologically, there were hypochromic anaemia and eosinophilia, with an increase in the erythrocyte sedimentation rate. Subcutaneous nodules developed in five cases and there were fourteen cases of peritendinitis. A few patients showed ocular changes, such as keratoconjunctivitis and iridocyclitis. Skin manifestations were common, ranging from a transient morbilliform rash to abnormal pigmentation. Five children were considered to be suffering from Still's disease, with pathological changes in the heart; the signs and symptoms in these cases included arthritis, fever, enlargement of the spleen and lymph nodes, sweating, wasting, and anaemia. One patient with Still's disease died from heart failure.  

In the treatment of these cases every effort was made to avoid contractures by employing active movements, pin-traction, splints, and plaster-of-Paris bandages. Gold, salicylates, antihistamine drugs, and, especially in Still's disease, blood transfusions were given. When the patients were re-examined about 5 years later it was found that 53 children were free from symptoms. So far as the joint lesions were concerned, relapses were recorded in 29 instances.  

The authors state that in spite of the increasing use of hormones in the treatment of rheumatoid arthritis in children there has been little or no improvement in prognosis.  

A. Garland.

**Rheumatoid Arthritis of the Crico-Arytenoid Joints.**  

Rheumatoid arthritis of the crico-arytenoid joints is a rare condition, and although isolated cases have been described, mostly in Continental journals, and casual reference can be found to it in otorhinolaryngological text-books, the subject has hitherto received little attention. The present author describes three patients: a 60-year-old man and two women aged 54 and 70 years respectively. The chief symptom is hoarseness, without the development of sore throat, in a patient with rheumatoid arthritis. There is pain on coughing and swallowing. On direct laryngoscopy movement of one or both vocal cords is restricted and manipulation of the arytenoid cartilage with a spatula is painful. There may be redness or swelling about the cartilages. The episodes tend to recur and to coincide with a flare-up of arthritis in the peripheral joints. They are usually diagnosed as laryngitis and may be labelled hysterical until the true nature of the disease is known. In two of the author's cases the inflammation receded without leaving any permanent deformity, but in the third the cords remained fixed and hoarseness was permanent.  

William Hughes.

A further case of rheumatoid arthritis of the crico-arytenoid joints, with laryngeal stridor, is described by Baker and Bywaters in the same issue (*Brit. med. J.*, 1957, 1, 1400).


Working at the National Institute of Arthritis and Metabolic Diseases, Bethesda, Maryland, the authors
have reviewed the therapeutic possibilities of certain new steroids in rheumatoid arthritis and have observed particularly the effect of long-term treatment with prednisone.

They point out that the advantages claimed for these substances are that they do not cause sodium retention and that they are effective in cases which have ceased to respond to cortisone. However, at the end of 2 years' observation of 39 patients treated with prednisone the number and seriousness of side-effects is causing concern. Pathological fractures occurred in 21 per cent. of cases, mental changes in 16 per cent., and peptic ulcer in 16 per cent. All the patients who developed severe side-effects were receiving a dosage of more than 15 mg. daily, and the authors conclude that the hazards of long-term treatment with prednisone increase markedly when the dosage is above this level.  

**Oswald Savage.**


Of 68 patients suffering from rheumatoid arthritis who had been treated with cortisone acetate at a number of centres in Great Britain for at least one year, 33 continued to receive cortisone, and 35, selected at random, received prednisone acetate in its place. A clinical assessment of each case was made on entry into the trial and repeated at monthly intervals for 12 months. The initial dosage of prednisone was one-third the dosage of cortisone previously taken, but adjustments were subsequently made to obtain the maximum possible benefit without side-effects. The average daily dose of cortisone was slightly more than 60 mg., whereas that of prednisone was about 20 mg. in the first few months, falling to 14 mg. by the end of the year.

On the whole the patients receiving prednisone required fewer analgesic tablets than those receiving cortisone. The cortisone group showed little change in clinical state at the end of the year, but the prednisone group had improved, on average, in respect of strength of grip, erythrocyte sedimentation rate, haemoglobin level, general functional capacity, and disease activity; the benefit from prednisone was greatest in the first 3 months and tended to decrease later, but this finding may be accounted for by the reduction in dosage to eliminate side-effects. On the other hand the incidence of “moon-face” was much higher in the prednisone-treated group.  

**D. Preiskel.**


The author reviews his results obtained in the oral treatment with chloroquine of 125 patients [age unstated] seen in private practice in Vancouver who were suffering from “rheumatoid disease”, under which heading he includes ankylosing spondylitis, psoriatic arthritis, and “cases of juvenile onset”. The duration of the disease ranged from a few months to 6 years. Chloroquine was given in a dosage of 250 mg. daily, 75 per cent. of the patients receiving continuous therapy for more than a year and 50 per cent. for more than 2 years, the aim being to continue treatment for one year longer than the disease had been present. All patients were also receiving routine physiotherapy, planned rest, and sedation at the same time as chloroquine, as well as salicylates “in adequate dosage”. Adrenal corticosteroids were given to 35 per cent. of the patients [doses and periods unstated] when the author considered them necessary. [There was no control group, although a small double-blindfold study (21 cases), too small for statistical analysis, showed that there was greater improvement in those given chloroquine.]
ABSTRACTS

Routine clinical and laboratory examinations, of which a few details are given, were carried out before and at frequent intervals during therapy, but there were no facilities for performance of the Rose-Waaler test. Discussing the response to chloroquine the author points out that while some subjective improvement may result within a few weeks, objective response takes up to 12 weeks to appear and from 6 to 12 months to reach its maximum. By the standards of the American Rheumatism Association, remission or major improvement occurred in 70 per cent. of the patients, these gains being paralleled by improvement in work performance, erythrocyte sedimentation rate, and haemoglobin level. Of the 29 patients in whom the treatment failed, over half had had severe or prolonged rheumatoid activity, while the other half responded initially to chloroquine but suffered toxic side-effects necessitating reduction of dose or withdrawal of the drug. Toxic reactions, which are described in detail, included dermatitis (35 per cent. of all patients), nausea, vertigo and vomiting (32 per cent. of all patients), pancytopenia, and an unusual lymphoedema of the forearm and hand. These reactions were severe enough to require reduction in dosage in 36 per cent. of the patients, and permanent withdrawal in 10 per cent. Nevertheless, the author is of the opinion that chloroquine is one of the safest agents for the long-term control of rheumatoid activity and for the prevention of relapses.

J. Warwick Buckler.

"Combined Medical Therapy" of Rheumatoid Arthritis, with Particular Reference to the Combination of Gold and Hormones. (Considerazioni sulle cosiddette "terapie medicamentose associate" dell'artrite reumatoide, con particolare riguardo all'associazione crisostromale.) Robecchi, A. (1957). Minerva med. (Torino), 48, 2713.


(Osteo-Arthritis)


Significance and Frequency of the "Double-bottom" Sign in Radiographs of Osteoarthritic Hip Joints. (Significato e frequenza del cosiddetto "doppio fondo" sintomo radiologico dell'artrosi coxo-femorale.) Di Vittorio, S., and Monateri, P. C. (1957). Reumatismo, 9, 255. 9 figs.
(Spondylitis)


Experience of cortisone and allied substances in the treatment of fourteen patients suffering from ankylosing spondylitis is reported from the South Devon and East Cornwall Hospital, Plymouth. In the first five cases in the series, 10 to 25 units of long-acting corticotrophin (ACTH) was given twice daily, but later cortisone in a daily dosage of 50 to 100 mg. was employed. The duration of symptoms before the start of treatment varied from 1 to 40 years, but only in two cases was it under 5 years. Relief of pain was rapid and accompanied by some increased freedom of movement; this improvement was maintained when treatment was discontinued in two cases. One patient had marked relief of pain for 2 years while receiving corticotrophin, but died at the end of that period from cor pulmonale. Corticotrophin had to be discontinued in one case because of haemorrhage from a duodenal ulcer. Improvement was maintained in the two remaining patients, the period of observation ranging from 10 months to 2 years.

C. E. Quin.


The author analyses the value of radiotherapy in the treatment of ankylosing spondylitis, bearing particularly in mind the genetic effects of such radiations and also the risks to the individual. The study is based on 455 out of 630 cases of the disease treated by irradiation at University College Hospital, London, between 1940 and 1953, all of which were followed up for at least 2 years, 31 per cent. being followed for up to 5 years, 38 per cent. up to 10 years, and 31 per cent. for over 10 years. The disease was regarded as typical in all but 28 cases and was divided into four stages radiologically. The patients were also grouped clinically according to their capacity for work. Treatment was in all cases given locally with conventional apparatus to a skin dose not exceeding 1,500r over 2 weeks to two fields.

Contrary to the findings in some published reports, leucopenia (less than 4,000 leucocytes per c.mm.) was found during or immediately after treatment in only eighteen of one hundred cases chosen at random. However, out of twenty women between the ages of 20 and 40 who had treatment to the sacro-iliac joints, in only five did menstruation continue unaltered. The number of patients of both sexes who received unavoidable radiation to the gonads was not considered large enough to be genetically significant, but the consequences for the individual patient are stressed. Attention is drawn to the relatively high incidence of pulmonary tuberculosis in patients with ankylosing spondylitis (twenty cases in this series), but there was no increase in the number of deaths from neoplasms. There were two cases of leukaemia, one of acute and one of chronic myeloid leukaemia, an incidence of 1 in 225.

Although 43 per cent. of the cases relapsed after the first course of treatment and had to undergo a second course, the author finds that some 70 per cent. of these patients had derived considerable benefit from the treatment. The importance of general medical care and physiotherapy in conjunction with radiotherapy is stressed. The results in this series confirm that treatment by irradiation involves a tenfold risk of inducing leukaemia in these patients, compared with that in the general population.

R. D. S. Rhys-Lewis.


Trigger Finger as a Rheumatic Manifestation. [In English.] Sairanen, E. (1957). *Acta rheum. scand.*, 3, 266. 9 refs.


(Miscellaneous)


The authors state that electrocardiography is now a routine procedure in their investigation of patients with Reiter’s syndrome, and of a series of 24 such patients, three had an abnormal electrocardiogram (ECG).
In the first case, that of a man of 38, the ECG showed a P-R interval of 0·28 second and ST elevation in leads I, VI, V₁, V₂, V₃, and V₄; 9 days later the patient complained of a pain in the chest, and a transient pericardial friction-rub was heard; the E.C.G. changes persisted for 6 months.

The second patient, a man of 24, had persistent tachycardia; the ECG in this case showed transient changes with elevated ST segments in leads I, II, CR₁, CR₄, and CR₇.

The third patient, a man aged 33, complained of chest pain and had a pericardial friction-rub. The ECG showed ST elevation in leads I, II, V₁, and V₂.

The authors recommend careful assessment of cardiac status in all patients with Reiter’s syndrome.

W. J. H. Butterfield.


Primary and Secondary Rheumatism with reference to Certain Cases of Polyarthritis with Pulmonary Tumours. (Reumatismi primari e secondari con considerazioni su alcuni casi di poliartrite da tumore polmonare.) Robecchi, A. (1957). Reumatismo, 9, 155.


Serological Reactions in Rheumatism. (Serologische Reaktionen beim Rheumatismus.) Hartmann, F. (1957). Z. Rheumaforsch., 16, 150. 8 figs, bibl.


Ultimate Hormonological Basis of the Combination of Salicylates and Prednisone in Antirheumatic Treatment. (Sull’eventuale substrato ormologico dell’associazione salicilato-prednisone nella terapia antirreumatica.) Scalabrino, R., and Paquirielo, G. (1957). Reumatismo, 9, 180. 7 figs, bibl.


Clinical Study of Patients with Rheumatic Diseases admitted to the S.N. Hospital, Agra, from 1946 to 1955. Gour, K. N. (1957). Indian Heart J., 9, 100.


Disk Syndrome


A clinical study of 78 patients with cervical spondylosis and a neurological deficit was carried out at the General Infirmary at Leeds; males outnumbered females by four to one and the patients' ages varied from 28 to 68. In 55 cases myelopathy was present, sometimes with evidence of root lesions in addition, and in seventeen a radiculopathy was present. The average duration of symptoms was 2 to 3 years, during which time steady deterioration was usual. The mode of onset was: in 37 cases with symptoms of cervical root lesions—motor or sensory—with or without the later appearance of a progressive paraplegia; in nineteen cases with a progressive paraplegia without sensory disturbance, which might later be followed by involvement of the upper limbs; in five cases with simultaneous involvement of the upper and lower limbs; and in the remaining eight cases with completely atypical symptoms. One-third of the patients had cervical pain with or without radiation to the arms, and 41 had paraesthesiae most commonly affecting the distal portions of the upper limbs. Clumsiness of upper limb movement and stiffness of the lower limbs were the common motor symptoms.

Examination revealed occasional cranial-nerve abnormalities, and limitation of neck movement in forty patients. The motor signs included wasting, weakness, and fasciculation, with but slight spasticity, in the upper limbs, and in the lower limbs spasticity and disturbance of gait. Reflex abnormalities included extensor plantar responses in all cases of myelopathy, with exaggeration of the tendon reflexes in the lower limb, and absent abdominal reflexes in 50 per cent. In rather less than one-third of the cases abnormality of the reflexes in the upper limb suggested a cervical segmental lesion. The sensory impairment in some cases involved the peripheral parts of the dermatomes in the upper limbs, in others it resembled the suspended and dissociated sensory loss seen in syringomyelia in the lower cervical and upper dorsal dermatomes, and in a third group there was loss of sensibility below a well defined sensory level. Lumbar puncture showed a partial block in eight cases and a complete block in two fluid flow being normal in 61; in 22 cases the protein content of the cerebrospinal fluid was increased to 56 to 200 mg. per 100 ml. On plain radiography typical abnormalities were present in every case, varying in severity, and in all the 77 patients subjected to myelography anterior indentation of the column of opaque medium was present. However, the extent of the neurological disturbance bore little relationship to the degree of abnormality seen on plain films or myelograms.

It is stressed not only that the features of a myelopathy attributable to cervical spondylosis may resemble those of other diseases, but also that the combination of cervical spondylosis and a neurological deficit does not afford assurance that the latter results from the former. Among conditions to be considered in differential diagnosis are motor neurone disease, disseminated sclerosis, subacute combined degeneration of the cord, and syringomyelia, as well as the various lesions outside the spinal canal which involve the motor and sensory innervation of the upper limb.

In considering the importance of trauma it is suggested that:

(1) spondylosis localized to a single intervertebral level is indicative of a previous post-traumatic disk protrusion at this level;

(2) in the presence of spondylosis trauma may aggravate an existing myelopathy without necessarily giving rise to a disk protrusion;

(3) occupational stress does not appear to predispose to cervical spondylosis, though when the vertebral lesions are present it may increase the risk of a myelopathy developing.

Medical treatment was of little value in cases of myelopathy associated with generalized spondylosis, but improved most cases in which the spondylosis was localized, and relieved the majority of those with brachialgia. Surgical treatment carried a mortality of 10 per cent. There was initial improvement, but the disease frequently progressed again after 6 to 18 months—and among those cases in which good results were obtained are included those in which a protrusion of disk tissue had been excised, a procedure which is far more likely to benefit the patient than the laminectomy and division of slips of the dentate ligament which is alone possible in cases of true spondylosis.

It is pointed out that the aetiology of the myelopathy in cervical spondylosis is obscure, and stressed that it is seldom related to direct compression of the cord. Neither does tension applied through the dentate ligaments or constriction by adhesions appear to be responsible for the cord lesion. The possible importance of some mechanism interfering with the blood supply of the cervical cord is discussed.


Among a series of 154 patients operated on at St. Vincent's Hospital, Toledo, Ohio, for symptoms of prolapsed lumbar intervertebral disk (that is, backache and unilateral sciatica) nine were found to have instead a bony spur (localized hypertrophic osteoarthritis) which was compressing a nerve root. Of these nine patients eight were females and only one male, contrasting with a 2:1 ratio in the former study]
male preponderance in cases of ordinary prolapsed disk. In seven of the cases the symptoms were precipitated by a fall on the buttoks, and it is postulated that a fracture or a periosteal tear at the interarticular isthmus with subsequent new bone formation may be an important factor in the aetiology. Pain was not as severe in onset as usually occurs in true herniation of a disk; the duration of symptoms was from 2 to 12 months. In four cases the patient complained of numbness in the involved extremity and two had paraesthesiae. Coughing and straining exacerbated the symptoms in four cases. Relief was obtained by three patients following rest in bed, and temporary relief by another three, but there was recurrence on mobilization. Physical examination showed no significant differences from the picture of prolapsed disk. Of interest was the fact that in eight cases the lesion occurred at the L4-L5 articulation, compressing the root of L5, while the remaining case was at L3-L4 involving the L4 nerve root.

Straight x-ray examination showed obliquity of the facets of the lateral intervertebral joint at the suspected level, and also a deformity which the authors term a "bulbous facet". The deformity may be verified by lumbar myelography in many instances. All nine cases were treated by unilateral hemilaminotomy. At operation the bony erosion was found to arise from the medial margin of the facet or adjacent to the facet, that is, on the interarticular isthmus. Removal of the exostosis relieved the symptoms completely in eight of the nine cases. The authors regard the lesion as a manifestation of traumatic arthritis, and comment on the relief of back pain which followed operation in these cases, in contrast to its frequent persistence following operative removal of an intervertebral disk.

J. V. Crawford.

Low Back and Sciatic Pain. BRADFORD, F. K. (1957).
J. Indiana med. Ass., 50, 559.

Gout
Prevention of Attacks of Gout with Phenylbutazone.
(Prevención de los ataques gotosos por la fenilbutazona.) MORENO, A. R. (1956). Arch. argent.
Resum., 19, 188.

At the Anti-Rheumatism Centre of the Faculty of Medical Science, Buenos Aires, the author treated 22 men aged 42 to 70 with gout of 7 or more years' duration, each of whom had had one or more attacks in the preceding year, with 100 to 200 mg. phenylbutazone daily for 1 to 2 years. A similar group of 22 men with gout who received intermittent medication during attacks only served as controls. In addition, ten patients with gout were given continuous, then intermittent, then continuous medication in consecutive years.

Only seven attacks of gout occurred during the first year of the trial in the group of 22 men receiving phenylbutazone continuously, as opposed to 88 attacks in the control group. In the group receiving alternating methods of medication, the total number of attacks in the year before the trial was 47; in the first and third years (continuous medication) there were three attacks; and in the second year (intermittent medication) forty attacks. No toxic effects were seen, routine leucocyte counts and urine examination being carried out. There was no effect on the hyperuricaemia. The author concludes that continuous treatment of gouty patients with small doses of phenylbutazone can safely be undertaken and will prevent recurrences of acute gout. [Data on the comparability of the treatment groups are not given.]

Allan St. J. Dixon.


The serum of 45 patients presenting with various arthritic manifestations of gout has been analysed by zone electrophoresis for proteins, glycoproteins, and lipoproteins. Serial estimations were performed in five patients, four of whom had suffered exacerbations.

The serum of a gouty subject free of symptoms shows a slight diminution in the α2 globulin and more pronounced of the corresponding glycoprotein, and an increase in the β globulin and, most strikingly, of the corresponding glyco- and lipo-proteins. Alterations in γ lipoproteins are related to the severity of the disease and even more to the diet. The onset of a relapse is heralded by a fall in albumin and α2 glycoproteins and an increase in β and γ lipoproteins.

The usual concomitants of inflammatory reaction (increased α1 and γ glycoprotein) are found but rather late in relation to the appearance of the clinical signs and their return to the previous levels is rapid.

Alterations in the differential protein pattern or in the sedimentation rate are marked only in severe exacerbations, suggesting a diminished ability of the body to react to the stimuli. The action of phenylbutazone, Benemid [probencid], and colchicine on these changes has been studied.—[Authors' summary (transl. A. M. Joekes).]


Pararheumatic (Collagen) Diseases

A study is reported from the Mayo Clinic of the urinary excretion of creatine and creatinine of 134 patients with dermatomyositis and 27 patients suffering from other diseases. Increased excretion of creatine...
was observed in dermatomyositis, as well as in many other diseases, especially those characterized by muscular degeneration and wasting. Creatinuria is especially marked during the acute febrile stage of dermatomyositis. Remission of the disease, whether spontaneous or induced by administration of steroids, is accompanied by creatinine. On the other hand, excretion of creatinine is reduced in all phases of dermatomyositis and in other diseases characterized by muscular degeneration.

The authors consider that the urinary excretion of creatine and creatinine is of limited value in the diagnosis and prognosis of dermatomyositis. A. Swan.


From the University Clinic, Geneva, comes this clinical account of thirteen cases of disseminated lupus erythematosus, twelve of which were in women. The prominent symptoms, in descending order of frequency, were fever, joint pains, pleurisy and myalgia, loss of weight, and asthenia. The parts most commonly and most severely involved were the joints (ten cases), followed by the skin; the kidneys were the site of the presenting symptoms in only two cases and the heart in one. Poor resistance to infection was noted and was attributed to an abnormal plasma globulin pattern. The authors suggest that lupus erythematosus should be considered in the differential diagnosis of every case of pyrexia of uncertain origin, without waiting for a complete clinical picture to emerge. The multiplicity of the cutaneous manifestations is stressed and the inadequacy of the term "lupus" discussed.

In contrast to the variability of the clinical picture the disease, as a biological syndrome, is remarkably constant. It is characterized by a dysglobulinaemia with excess of globulins (usually of γ globulin and/or of α₂ globulin), and hypo-albuminaemia. The dysglobulinaemia is responsible for a number of abnormal laboratory findings, such as the raised erythrocyte sedimentation rate, abnormal plasma protein electrophoretic pattern, abnormal colloidal ("turbidity") test results, and false positive reactions in the Widal test and serological tests for syphilis. Among the abnormal globulins there may be a number of antibodies giving rise to haemolysis, leucopenia, thrombocytopenia, a positive reaction to the Coombs test, and, most important diagnostically, anticellular bodies responsible for the appearance of L.E. cells. In all of the thirteen cases described the presence of L.E. cells was demonstrated. A. Swan.


From the Cleveland Clinic Foundation, Cleveland, Ohio, are reported twelve cases (two in males and ten in females) of severe systemic lupus erythematosus in which the patients have lived six years or more after an acute episode from which they were not expected to recover. Summaries of the case histories are given and photographs illustrate selected cases. Four of the patients originally came under observation following the discovery of false positive results of serological tests for syphilis. All twelve patients except one received steroid therapy during the acute phases of the disease, but the most dramatic therapeutic response was seen in two cases where steroids were combined with nitrogen mustard, although in one of these cases a severe leucopenia developed. Among adjuvant methods of treatment employed were x-irradiation of the ovaries (in three cases) and administration of antimarial drugs. Such preparations were considered particularly useful as agents against photosensitivity and may have some value in reducing the dosage of steroids required for control. The author considers that steroid treatment is specifically indicated for acute episodes until a remission occurs, and that it may also be used during pregnancy or during surgical procedures to guard against possible untoward effects due to instability of the disease. Although it is recommended that pregnancy be avoided, it should be permitted, because negative and serum protein electrophoretic patterns changed towards normal; even so it is suggested that although stable remissions may be obtainable it is doubtful whether true "cures" occur. Benjamin Schwartz.


The author has sought to elucidate the relationship between cutaneous and disseminated lupus erythematosus by means of a questionnaire sent to 1,200 Fellows of the American Academy of Dermatology, of whom 792 replied, and to 135 internists, one hundred of whom replied. By this method [which has obvious drawbacks] he has collected information about 353 cases of discoid lupus erythematosus known to have been followed by disseminated lupus erythematosus. Of the 353 cases L.E. cells were found in 97. It also appeared that the chronic localized discoid form of the disease often was present for many years before the development of the disseminated form.

Case histories are appended of three patients who had had chronic discoid lupus erythematosus for 13, 10, and 6 years, respectively, and who then developed the acute disseminated form of the disease. In all three cases L.E. cells were found together with leucopenia, thrombocytopenia, and reversal of the albumin:globulin ratio. Despite steroid therapy two of the three patients died shortly after the onset of disseminated lupus erythematosus.

J. N. Harris-Jones.


Following upon the work of Moore on the biological false positive reaction for syphilis in systemic lupus
erythematous (Ann. intern. Med., 1952, 37, 1156; J. chron. Dis., 1955, 1, 297; Abstracts of World Medicine, 1953, 14, 110, and 1955, 18, 408), a series of 79 cases of known clinical lupus erythematous were examined at the University and Mount Sinai Hospitals, New York. A battery of standard serological tests for syphilis (S.T.S.) was employed as well as the recently introduced immune adherence, complement-fixation, and in some cases immobilization tests employing the specific antigens of Treponema pallidum (T.P. tests). In 35 cases the patient's serum gave positive results with the S.T.S., while only in three were positive reactions obtained with the T.P. tests. Two of the latter patients had known syphilis, while the third result was unexplained. The authors underline the usefulness of the T.P. tests in distinguishing false positive reactors, and suggest that the T.P. complement-fixation test, because of the ease and cheapness of its performance, is the most suitable for wider use.

[The article includes a good summary of previous publications on this subject.]

Allene Scott.


In this paper the authors examine the question whether there is a common hereditary predisposition to rheumatic fever and rheumatoid arthritis. The index cases were drawn from a consecutive series of 602 cases recorded at the Institute of Pathology of the University of Florence between 1940 and 1955. It was possible to examine the families of 479 of these patients, of whom 287 had had rheumatic fever and 192 rheumatoid arthritis. All these families lived in or near Florence. The examination included the first-degree relatives and, where possible, the second-degree relatives of the index cases. A similar examination was made concurrently of the families of three hundred control subjects—patients with acute or chronic infectious disorders and psychoneuroses.

The authors found that among the relatives of persons with a history of rheumatic fever there was not only a higher incidence of rheumatic fever than among the relatives of the control series, but also a higher incidence of rheumatoid arthritis. For example, among the 1,445 first-degree relatives of the rheumatic fever index cases the incidence of rheumatoid arthritis was 2.6 per cent. compared with 0.4 per cent. among the 1,449 first-degree relatives of the controls. Conversely the relatives of the patients with rheumatoid arthritis not only had a higher incidence of rheumatoid arthritis, but also a higher incidence of rheumatic fever than the relatives of the controls. The incidence of rheumatic fever was 4.3 per cent. among the 1,163 first-degree relatives of the patients with rheumatoid arthritis and 2.2 per cent. for the 1,695 first-degree relatives of the controls.

The authors conclude that rheumatic fever and rheumatoid arthritis are expressions of the same genetic predisposition and suggest that a single dominant gene of variable manifestation is concerned.

[No attempt was made to match or correct for age in this survey.]

C. O. Carter.


Some evidence of gastro-intestinal involvement was found in 32 out of 87 patients with proved systemic lupus erythematosus. In 25 of these the symptoms were of minor importance and responded rapidly to treatment. In the remaining seven, however, symptoms were severe; these seven cases are described in detail in the present paper.

The symptoms were shown to be due to ileus in five patients, involving the stomach, duodenum, or jejunum. In three patients with duodenal ileus the radiological appearances were similar to those seen in the superior mesenteric artery syndrome. Radiographs in one patient with acute abdominal symptoms on admission revealed a perforated ulcer on the lesser curvature of the stomach, possibly a result of steroid therapy. The authors state that the treatment of ileus in such cases as these should be conservative, although surgical drainage was carried out in one case. Factors possibly responsible for ileus were collagen deposits in the submucosa, vascular changes associated with the primary disease, and autonomic-nervous involvement.

The remaining two patients in the authors' series had both lupus erythematosus and ulcerative colitis, and the many features common to both conditions are described.

J. N. Harris-Jones.


Fibrinoid alteration of collagenous tissue, so characteristic of the so-called collagen diseases, is known to be preceded by a local increase in concentration of acid mucopolysaccharides. Structures containing acid mucopolysaccharides are selectively stained by Alcian blue, a relatively new phthalocyanine dye. A method combining Alcian blue staining with the periodic-acid–Schiff technique was used by the authors in the examination of involved skin from 28 patients with various collagen diseases, the resulting excellent colour contrast facilitating the recognition of material stained by Alcian blue (A.B.-positive material).

Although approximately constant in the several specimens from each individual collagen disease under consideration, the quantity of A.B.-positive material varied from one disease to another. Small quantities of A.B.-positive material were present throughout the upper dermis in discoid lupus erythematosus, in the near vicinity of the small vessels of the upper dermis in
morpha and generalized scleroderma, and throughout the upper dermis and in close proximity to damaged vessels in periarteritis nodosa. Small quantities of A.B.-positive material were also present throughout the upper dermis in normal skin. A.B.-positive material was remarkably abundant, by contrast, in the upper and middle dermis in dermatomyositis and disseminated lupus erythematosus.

[For details of the method of staining the original paper should be consulted.] A. Swan.


Five cases showing pathological evidence of pulmonary polyarteritis nodosa are reported from St. Thomas's Hospital, London. The first two cases were included in the 111 cases reviewed by Rose and Spencer (Quart. J. Med., 1957, 26, 43). Both were in middle-aged men who presented with respiratory symptoms together with evidence of extensive involvement of skin, retina, mucous membranes, and kidneys. Post-mortem studies revealed that, apart from widespread lesions of periarteritis nodosa in most viscera, there were particularly striking changes in the lungs and upper respiratory tract. Ulceration extended from the tongue to, and including, the larynx. There were well-defined areas of consolidation with cavitation in the lungs and, microscopically, complete loss of lung tissue. The pulmonary vasculature adjacent to these areas of cavitation showed changes typical of polyarteritis nodosa. This association of pulmonary and upper respiratory granulomata has been previously referred to as Wegener's syndrome.

The remaining three patients had pulmonary hypertension, in one as a result of emphysema and in two associated with mitral stenosis. All three patients died and in all three microscopy revealed evidence of an arteritis in the smaller pulmonary vessels. The author claims that he was able to distinguish these changes from those found commonly in pulmonary hypertension, and despite the absence of evidence of polyarteritis nodosa elsewhere, considers that these three cases are examples of pulmonary hypertensive polyarteritis.

J. N. Harris-Jones.


Cogan's syndrome consists of ciliary injection with granular infiltration of the cornea but no changes in the iris or fundus, together with tinnitus, severe vertigo and nystagmus, and rapid progressive deafness. There are no signs of systemic disease except eosinophilia and elevation of the erythrocyte sedimentation rate. Young males are most often affected.

The present author has seen four cases in the past 3 years in which the two conditions were associated and here reports two of them. The first patient, a man of 28, developed fever, diarrhoea, and cough, with deafness vertigo, and tinnitus, and interstitial keratitis. All pathological tests gave negative results (except for positive reactions to Salmonella paratyphosa B and ragweed) and all antibiotics tried proved useless. Cortisone applied locally cured the eye condition. There was severe residual deafness and loss of cold caloric responses. In the other case there was total loss of caloric responses, severe deafness, and recurring diarrhoea with fever. There was a family history of asthma, but no personal sensitivity was found. Except for the ear symptoms improvement was obtained with cortisone and blood transfusions. In both cases at some time during the course there was lymphadenopathy and enlargement of the liver and spleen.

F. W. Watkin-Thomas.


This paper from St. Mary's Hospital, London, describes the pulmonary manifestations of polyarteritis nodosa, 'since these are unfamiliar and often lead to errors in diagnosis'. It is based on a survey of 111 cases of polyarteritis nodosa undertaken for the Collagen Diseases and Hypersensitivity Panel of the Medical Research Council and previously reported by Rose and Spencer (Quart. J. Med., 1957, 26, 43; Abstracts of World Medicine, 1957, 22, 133). The lungs were involved in one-third of these cases.

Three types of pulmonary involvement are recognized and designated respectively pneumonic, bronchitic, and asthmatic. Records of cases illustrating the three types are presented. Three cases of the pneumonic type are described. In each case extensive pulmonary disease, considered to be and treated as tuberculosis in two cases, preceded the onset of generalized symptoms, with the development of which the illness was recognized as polyarteritis nodosa. The bronchitic variety is typified by a case in a woman who presented with a productive cough and in whom radiological examination showed minimal diffuse pulmonary infiltration. An accompanying proteinuria suggested polyarteritis, and this was confirmed by muscle biopsy. Finally, two cases are described in which periodic attacks of asthma dominated the clinical picture. Despite associated symptoms such as haemoptysis, haematuria, and subcutaneous nodules, the correct diagnosis was not reached in the first case (in a woman of 40) until material removed during a lobectomy for bronchostenosis was examined. Both lungs showed cystic changes, but the disease was controlled by administration of steroids. In the second case, in a boy of 16, the diagnosis was made only at necropsy following his sudden death 17 months after the onset of illness.

There do not seem to be any specific radiological changes when the lungs are involved in polyarteritis nodosa, but the presence of diffuse miliary stippling and transient pulmonary infiltrates is regarded as suggestive, and cystic cavities of any variety may be seen. It appears that the pulmonary phase of polyarteritis nodosa may often precede generalized systemic spread of the disease, but it is not considered possible to make a diagnosis with any degree of certainty at this stage of the illness.

J. N. Harris-Jones.
ABSTRACTS


The authors of this paper from Johns Hopkins University and Hospital, Baltimore, present a re-evaluation of the natural history of systemic lupus erythematosus (S.L.E.), the absence of any specific diagnostic feature of this disease, since the L.E.-cell phenomenon does not fully serve the purpose, making such a periodic re-orientation desirable in their opinion. Their investigations started from the observation, reported by Moore and Lutz (J. chron. Dis., 1955, 1, 297; Abstracts of World Medicine, 1955, 18, 408), that of 148 patients who gave chronic biological false positive reactions in standard lipid-antigen serological tests for syphilis and were followed up for one to 20 years, 42 per cent. eventually developed verified or probable S.L.E. or rheumatoid arthritis. The number of patients under observation has now increased to 210 and a detailed statistical analysis of the data derived from their study is in preparation. In the meantime the authors present an interim statement of their general impressions.

Consideration of the major clinical manifestations of S.L.E. leads them to conclude that the course of the disease is chronic, episodic, often relatively benign, and not necessarily fatal. No single manifestation is pathognomonic of S.L.E. episodes greatly differing in nature often succeeding each other over a period of many years separated by longer or shorter intervals, but together they may eventually prove sufficient to substantiate the diagnosis. The various clinical manifestations are collected in a table, and details of 6 illustrative cases are presented.

The authors suggest that, as was the case with syphilis, another chronic, episodic disease of many years’ duration and protean manifestations, the natural history of S.L.E. will not be wholly elucidated until a satisfactory aetiological factor is discovered. Harry Coke.


A comparative investigation of the effects of mepacrine and chloroquine in the treatment over a 2-year period of 137 patients with chronic lupus erythematosus is reported from the Finsen Institute, Copenhagen. Chloroquine was found to be preferable for a number of reasons. It did not cause discoloration of the skin and side-effects were fewer and less severe than with mepacrine. Therapeutic results were better with chloroquine, but with both drugs relapse was frequent. Relapse was not prevented by a low maintenance dose of chloroquine. John T. Ingram.


At the Royal Melbourne Hospital aspiration biopsy of the right kidney was performed, together with a battery of other tests, on eleven patients with systemic lupus erythematosus. The diagnosis in all cases was based on the clinical features and confirmed by the demonstration of L.E. cells in the peripheral blood. The eleven patients comprised nine females and two males, their ages ranging from 25 to 59 years. General symptoms of ill health, such as fever and loss of weight, were noted by all the patients, as were arthralgia or muscle pains. However, skin changes were present in only six. None had chronic discoid lupus erythematosus. Nine of the eleven patients were anaemic, and in five cases the Coombs test was positive. In six cases haemolysis or haemagglutinins were demonstrable in the blood. Erythrophagocytosis was demonstrated in eight cases. The serum gamma-globulin content was elevated in five of nine cases in which it was estimated. Some cardiovascular or renal involvement was present in all eleven patients, and seven of them had persistent albuminuria.

Of the eleven renal biopsy specimens, nine showed abnormal appearances, gross changes being present in five. The most frequent change was a thickening of the walls of the glomerular capillaries by an eosinophilic material which had the histochemical characters of fibrinoid. In its minimal form this process appeared as small foci throughout the glomerulus, while the glomerular capillaries remained patent. In some instances this produced the characteristic “wire-loop” appearance. In more severely affected glomeruli the process was diffuse, the lobulation of the tufts was lost, the capillary loops were diminished, and the number of nuclei in the glomerulus appeared to be increased. In its most advanced form this process resulted in obliteration of the glomerular vessels and their replacement by a whorl of avascular, acellular tissue with the staining properties of fibrinoid. The number of glomeruli contained in the biopsy specimens varied from 4 to 39, the average being 22.

The patients were followed up for periods varying from 6 months to 4 years. The “keystone of treatment” was oral cortisone (25 to 175 mg. daily). Progress in seven cases was good. A. Swan.


A case of a patient who developed a marked oedema of the left upper lid, which showed, histologically, periarteritis of the upper orbital arteries and a generalized periarteritis nodosa, is described. Diagnosis was possible only after biopsy. There is a short discussion on the aetiology, histology, and therapy. Focal allergy appears to be the most probable cause in the case described. The danger of treatment with antibiotics and possible improvement with cortisone and ACTH therapy are mentioned.—(Author’s summary.)


In an attempt to assess the value of this treatment, six personal cases together with twenty cases cited from

Ocular symptoms occur in polyarteritis in 10 to 23 per cent of cases. The symptoms are described, as well as the history, aetiology, and therapy of the condition.

W. Leydhecker.


Two Cases of Chronic Disseminated Lupus Erythematosus treated successively with ACTH, Cortisone, and Chloroquine. [In English.] Rehtuäri, Katri (1957). Acta derr-venereol. (Stockh.), 37, 242. 16 figs, 6 refs.


ABSTRACTS


GENERAL PATHOLOGY

BEHAVIOUR OF URINARY GLYCOPROTEINS IN RHEUMATIC AND OTHER DISEASES. (Sul comportamento dei glicoprotidi urinari nelle malattie reumatiche e in alcune altre condizioni morbose.) Bonomo, E., and Cerrettelli, P. (1957). Reumatismo, 9, 98. 3 figs, bibl.

In a study carried out at the Rheumatological Centre, University of Milan, the daily excretion of urinary acid mucopolysaccharides was determined in twelve normal subjects, seventeen patients with rheumatic diseases, and eleven others with various non-rheumatic diseases. The urinary mucoprotein excretion was also estimated in five normal and seven rheumatic subjects and the glycoprotein excretion in ten normal subjects, nine rheumatic patients, and sixteen with other diseases.

It was found that the excretion of acid mucopolysaccharides was increased in both the rheumatic patients and those with non-rheumatic diseases, the mean value being 5-5 mg. glycuronic acid per 24 hrs, compared with 3-7 mg. in normal subjects. Excretion of glycoprotein (precipitated by phosphotungstic acid) showed a similar increase, the patients having a mean of 16 mg. glucosamine hydrochloride per 24 hrs compared with 7 mg. in the controls. The differences in both these values are statistically highly significant (p<0-001). There was no significant difference in relation to sex, nor between patients with rheumatic disease and those with non-rheumatic disease. On the other hand there was no difference in the urinary excretion of mucopolysaccharides between the normal subjects and the patients with and without rheumatic disease.

The authors present a graph showing the serum mucoprotein levels for each patient plotted against urinary glycoprotein excretion. The result is a straight line, the correlation coefficient being 0-827. There is a full discussion of the literature on this subject.

D. Friedberg.


Experiments were carried out at the Institute of Rheumatology of the University of Rome on two patients suffering from ankylosing spondylitis and two healthy control subjects of the same age and build. In each case an ethyl chloride spray was applied for 5 seconds to a limited area of skin over the flexed elbow on two or three successive days. While the healthy subjects showed nothing but transient hyperaemia, the patients with ankylosing spondylitis each developed a small nodule under the skin at the site of stimulation which was tender on pressure and, in one case, acted as a "trigger-point" for pain radiating down the forearm. Biopsy of the subcutaneous tissue containing the nodule showed histological changes deemed to be typical of fibrositis.

L. Michaelis.


Although the antistreptolysin-O titre is simple to estimate it has not been widely used as a routine estimation, as the results are often difficult to interpret and it is necessary to know the prevalence of streptococcal infection and the level of antistreptolysin-O titre in the population being investigated. To provide such a base-line for these studies the author, working at the Hôtel-Dieu Hospital, Montreal, first performed this test on the sera of 1,153 presumably normal young adults aged from 15 to 40 years in the Montreal area. Of these, 648 (56·1 per cent.) showed a titre below 100 units, and 1,101 (95·5 per cent.) a titre below 250 units; thus only 4·5 per cent. had titres above 250 units.

The titres of groups of patients with various disorders were then studied. Of 46 cases of active rheumatic fever, only one was found to have a value below 100 units, while in the majority (38 cases) the value was over 250 units, the mean for the group being 665 units. In 72 patients with inactive rheumatic fever the titre was not raised so markedly, although it was still well above the normal range. Lastly, in 32 patients with rheumatoid arthritis and in 108 with miscellaneous diseases the range of titres corresponded quite well with that in the normal subjects. In further studies serial estimations of the antistreptolysin-O titre in the patients with acute rheumatic fever showed two patterns; in both the titre rose initially to a high level for about a month, but thereafter, although it sometimes fell to normal values with clinical recovery, it more often remained at a high level for many months after the disease had become inactive.
The author considers that this test is useful as an indicator of activity in rheumatic fever, and that a low antistreptolysin titre is of value diagnostically in excluding this condition. B. E. W. Mace.


The Rose–Waaler diagnostic test for rheumatoid arthritis depends on the ability of the serum of rheumatoid arthritic patients to agglutinate particles (sheep erythrocytes) coated with globulin (rabbit anti-sheep cell antibody). The authors, in the first of these papers from the Mount Sinai Hospital, New York, report experiments in which they showed that suspensions of polyvinyl toluene latex particles coated with commercial human gamma globulin show a similar specific agglutination reaction to arthritic sera. (Polymerene latex can also be used.) They describe the preparation and standardization of the latex suspension, and also the results of preliminary tests of varying the methodology, including the effects of pH, of the order of addition of the reagents, the amount of gamma globulin used, the temperature, and the addition of electrolytes to the system. The method finally adopted is described [the original paper must be consulted for details]. The test result is considered positive when agglutination is observed with a serum dilution of 1 in 20 or more. In clinical trials results compared well with other established techniques. The advantages of the test are that it can be completed in a few hours, and that the reagents used are more susceptible to standardization.

In the second paper the results are reported of the use of the latex-fixation technique to test 1,380 sera, 150 of which were from confirmed cases of rheumatoid arthritis. The number of cases and percentage positivity in each clinical group were as follows: 150 cases of rheumatoid arthritis (71 per cent.); 120 of osteo- and other types of arthritis (2 per cent.); 250 of rheumatic fever and rheumatic heart disease (1·6 per cent.); eighty of diseases [specified] with hyperglobulinaemia (5 per cent.); twenty of lupus erythematosus (5 per cent.); 560 of non-arthritic disease (3 per cent.) and 200 normal subjects (1 per cent.). The results are compared with those of the Rose differential sheep-cell agglutination test and the Heller test in rheumatoid arthritis and various other conditions. Results for the latex fixation test were either positive or negative, whereas for the sheep cell agglutination tests were recorded as positive, negative, or doubtful. When the tests were compared on a basis of negative results the findings were as follows: latex test, 28·7 per cent. in rheumatoid arthritis and 97·5 per cent. in other diseases; Rose test, 32 and 96·5 per cent.; Heller test, 26 and 95·5 per cent. Serum from some individual patients might give a positive result in one test and a negative result in another.

[This test is simpler than other specific tests for rheumatoid arthritis and promises to be as reliable.]

Allan St. J. Dixon.


From the Paediatric Clinic of the University of Florence the author presents the results of various biochemical investigations of the blood in three cases of dermatomyositis, two of progressive myositis ossificans, and one of scleroderma, the biochemical methods being briefly indicated. In two cases repeat tests were carried out after 30 to 50 days. Brief case histories are given, together with the dosage of cortisone and ACTH employed in two of the cases of dermatomyositis. The results are presented in tables, and electrophoretograms are reproduced.

The total plasma protein level was usually at first within normal limits and decreased slightly under treatment. The albumin fraction, which was relatively decreased but in absolute figures was almost normal, increased considerably during treatment in two of the cases of dermatomyositis. Plasma α₅ globulins showed wide variation both in relative and absolute values, but were never below the mean normal value. An increase in some cases was directly proportional to the severity of the illness or its progressive character, and the value usually decreased following hormone therapy. In two cases of dermatomyositis, one of myositis ossificans, and the one of scleroderma the absolute value of α₅ globulin was increased, but all percentage values were in the vicinity of normal. The β globulin values were generally normal, except in the case of scleroderma, but the γ globulin levels were considerably increased in all these patients.

The author favours Marmont's view that a primary noxious influence produces a change in the mesenchymal nucleoproteins, transforming them into endo-antigens, which in turn provoke antibody formation with a corresponding increase in the y-globulin fraction.

The plasma lipoprotein content was normal in all cases, as also were the total lipid, cholesterol, and lipid phosphorus levels. In two cases of dermatomyositis there was, however, a marked increase in the lipid fractions during treatment, a less pronounced increase in a case treated with prednisone, and this was followed in all three cases by an increase in the β-globulin value. The plasma mucoprotein, total non-glucosamine polysaccharide, and glucoprotein levels were increased, especially in two cases of dermatomyositis and in the two cases of myositis ossificans, in proportion to the severity and the progress of the disease. The ratio of total polysaccharides to total proteins was increased in all cases in parallel with the polysaccharide increase but independently of the levels of the other protein fractions. The literature is extensively reviewed.

F. Hillman.


The authors, at the Southwestern Medical School of the University of Texas, have continued their study of the pathogenesis of the “fibrinoid” change of vascular
ABSTRACTS

smooth muscle and renal glomeruli. Smooth muscle from the stomach and colon of dogs was allowed to autolyse under sterile conditions for 12 to 24 hours and then blended to form a fine suspension in saline or buffer solution. This material was injected unilaterally into the temporarily clamped renal arteries of anaesthetized dogs. The kidneys, when removed for examination 12 to 24 hours later, showed multiple infarcts, with injected material in the intertubular arteries and glomerular vessels as well as in some tubules.

The histochemical reactions of autolysed muscle were compared, in sections of these kidneys and in vitro, with fibrinoid in kidney sections from human cases of hypertension. Both materials were coloured red with Mallory's and Masson's trichrome stains, yellow with the Van Gieson stain, purple with the phosphotungstic-acid-haematoxylin agent, and blue with Weigert's fibrin stain. Both were sudanophil and gave positive reactions in the free potassium, free carbonyl, and protein-bound sulphhydril procedures. Human fibrinoid gave a positive reaction to the periodic-acid-Schiff test, but autolysed muscle gave a positive reaction only in vitro or in frozen section, the response being negative in paraffin sections.

The similarity in staining reactions is considered to support the authors' hypothesis that fibrinoid is derived from smooth muscle. In the human cases it was sometimes seen that glomerular fibrinoid was continuous with that of the afferent arteriole, and it is suggested that fibrinoid travels along the vessel lumen to be deposited in the glomerulus.

M. C. Berenbaum.


The authors, at the University of Pittsburgh School of Medicine, Pennsylvania, have applied the fluorescent antibody technique described by Coons and others (J. exp. Med., 1950, 91, 1) to the study of the characteristic lesions in three cases each of rheumatic carditis, disseminated lupus erythematosus, and rheumatoid arthritis. Fluorescein-labelled antibody to human gamma globulin was found to be strongly taken up by the altered perivascular tissues in rheumatic carditis, by the "onion-skin" perivascular splenic lesions, the walls of necrotic renal arterioles, the "wire-loop" glomerular capillaries, and the L.E.-cell inclusions in the cases of lupus, and by the necrotic centres of the subcutaneous nodules in the cases of rheumatoid arthritis. The lesions in rheumatic carditis and rheumatoid arthritis and the splenic lesions in lupus erythematosus were similarly shown to contain human serum albumin, but in much smaller amounts than gamma globulin.

No gamma globulin or serum albumin was found in normal tissues or tissues from a variety of diseases (myocardial fibrosis and infarction, renal, cardiac, and splenic atherosclerosis, diabetic glomerulosclerosis, and renal cortical necrosis). On the other hand acutely inflamed tissues from cases of appendicitis and pyelonephritis showed a greater accumulation of serum albumin than of gamma globulin, as would be expected if these changes were due to increased vascular permeability.

It appears, therefore, that the selective accumulation of gamma globulin in the three conditions studied is not due to the non-specific factors which would operate in a wide range of diseases, nor is it due to increased vascular permeability. A local antigen-antibody reaction is an attractive explanation, but as the authors [rightly] point out, there is no evidence so far that the gamma globulin involved is actually antibody, and this hypothesis cannot be substantiated until the antigens and antibodies involved are specifically characterized and demonstrated in the lesions.

M. C. Berenbaum.


At Bamberg General Hospital, Hamburg, two fatal cases of Felty's syndrome were histologically investigated. In both cases a generalized plasmocytic hyperplasia of the lymph nodes and, to a lesser degree, of the liver was found. In addition, intra- and extra-cellular protein deposits, usually in the form of droplets, were demonstrated by various staining techniques; these droplets were present mainly in the reticulo-endothelial system where they aggregated especially around the plasma-cell infiltrations. As the author points out, similar protein deposits have been described in cases of multiple myeloma, kala-azar, malaria, and chronic sepsis, and therefore they are clearly not specific for Felty's syndrome. It is suggested that Felty's syndrome may be an atypical form of rheumatoid arthritis and not a primary metabolic disorder.

G. W. Csontka.


This paper from the National Institute of Arthritis and Metabolic Diseases, Bethesda, Maryland, reports ten cases of rheumatoid arthritis exhibiting vasculitis which were observed during a period of 4 years. All these patients had subcutaneous nodules. The L.E.-cell test was negative and there was no other evidence of disseminated lupus erythematosus. In the majority the lesions were histologically indistinguishable from those of polyarteritis nodosa.

The authors discuss the possibility that steroid therapy caused the vascular lesions in these and similar cases which have been reported more frequently recently, but they conclude that "there is, at present, no substantial basis to estimate the magnitude of the postulated increased risk of their occurrence as a result of such therapy".

Oswald Savage.


Experimental Arthritis. I. Morphologic Alterations in the Guinea-Pig after the Parenteral Injection of Bacterial Extracts. II. Studies with C-Labelled Polysaccharide Complexes of Klebsiella pneumoniae Type B. Jones, R. S., and Carter, Y. (1957). A.M.A. Arch. Path., 63, 472, 18 figs, 34 refs, and 484, 13 figs, 20 refs.


C-reactive Protein Test in Clinical Practice. (La proteina C-reactiva nella pratica clinica.) Carcassi, U., and Pizzu, F. (1957). Minerva med. (Torino), 48, 2399. 10 figs, 78 refs.


ACTH, Cortisone, and Other Steroids


In this study, reported from the University of Colorado School of Medicine, the effect of anaesthesia on the free and glucuronic acid-(conjugated) plasma 17-hydroxycorticosteroid level and on the adrenocortical response to surgery was investigated in seventy patients aged from 5 to 81 years who were divided into four groups as follows:

1. Thirty-five patients in whom, after induction with thiopentone and cyclopropane, cyclopropane alone, or nitrous oxide alone, anaesthesia was maintained on ether;
2. Fifteen patients given thiopentone and nitrous oxide throughout;
3. Ten patients given cyclopropane only;
4. Ten patients receiving spinal analgesia (amethocaine).

Control blood samples were taken during the morning hours in order to equate the diurnal cycle, and after one hour of inhalation anaesthesia (after 15 to 45 minutes for spinal analgesia); a second sample of blood was taken before the start of the operation. After one hour of surgery a third sample was taken, and the plasma level of free 17-hydroxycorticosteroids estimated by the modified method of Nelson and Samuel. Conjugated 17-hydroxycorticosteroids were determined by Bongiovanni's method, with benzene-water partitioning.

The mean control level of free plasma 17-hydroxycorticosteroids for the entire group was found to be 12-8 mg per 100 ml. plasma, a result agreeing well with other reported values. Cyclopropane, thiopentone-nitrous oxide, and spinal analgesia caused no significant rise in the 17-hydroxycorticosteroid level, only three out of the 35 patients in these groups showing an appreciable rise. Of the 35 patients maintained on ether, however, fifteen showed a significant rise in the mean value, but the effect was quite inconsistent, the other twenty showing only minor changes. Thus of the total seventy patients, eighteen showed a significant increase in the free plasma 17-hydroxycorticosteroid level, and of these fifteen had
received ether. After the operation had been in progress for one hour the plasma level of free 17-hydroxycorticosteroid rose significantly in the three groups receiving inhalation anaesthesia, but no appreciable change in level occurred in the group given spinal anaesthesia.

The conjugated plasma hydroxycorticosteroid level was also estimated in 24 patients, fifteen of whom received ether. Because a delay in the rise of conjugated plasma levels occurs following a rise in the free plasma level, blood samples were also taken at the end of surgery in these cases. The mean plasma values for both conjugated and free steroids were found to follow identical curves in all three groups given inhalation anaesthesia. These results show the effect of different anaesthetics on the pituitary–adrenocortical system and the authors discuss the significance of their findings. The absence of a rise in plasma hydroxycorticosteroid levels under spinal anaesthesia demonstrates that intact sensory pathways to the central nervous systems are necessary for the normal adrenocortical response to trauma to appear. Although some workers have reported that barbiturates cause a partial suppression of the adrenocortical response to cold and even to surgical trauma, the different premedication agents used in this study did not appear to affect the subsequent response to anaesthesia and surgery.

Discussing the mechanism by which such rises in plasma steroid levels occur the authors conclude that adrenocortical stimulation, rather than a decreased rate of steroid disappearance from the plasma, is the factor responsible.

Raymond Vale.

Action of Cortisone and Anterior Corticotrophic Hormone on Experimental Gastritis and Gastric Ulcers. Rodríguez-Ollerós, A., Galindo, L. (1957). Gastroenterology, 32, 675. 7 figs, 46 refs. The effect of ACTH and cortisone on the course of experimentally-induced lesions of the stomach and duodenum was studied at the University of Puerto Rico. Gastritis and erosions were induced in eighteen dogs by intramuscular injection of pancreatic juice (triple strength “panteric” powder buffered to a pH of 7.4 by potassium phosphate and disodium phosphate). Ten of the animals were also given daily injections of 30 to 40 mg. cortisone starting on the third to the fifth day; the remaining eight dogs served as controls. The erosions occurred mainly on the lesser curvature and pyloric antrum and duodenum and were usually punctiform in type. There was no difference between the control and cortisone-treated groups in the rate of healing of the gastric lesions.

In a further series of experiments in dogs “Atrophan” (Cincepten) was given in aqueous suspension by catheter in amounts of 2 g. daily for 4 days. With this procedure an ulcerative gastritis was produced. Cortisone in a dosage of 40 mg. daily was given in addition to Cincepten to a group of ten dogs who had been given the latter drug for up to eight days. The addition of cortisone did not increase the erosive gastric lesions and did not hinder the healing tendency of Cincepten-induced ulcers. The authors conclude that neither cortisone nor ACTH has any influence on experimentally-induced gastric ulcers but that “spontaneous” human ulcers may be affected by these hormones.

I. McLean Baird.


The authors, working at the Boston Veterans Administration Hospital, have investigated the comparative merits of two different methods of assessing the urinary metabolites of the adrenocortical steroids. The phenylhydrazine–sulphuric acid reaction introduced by Porter and Silber (J. biol. Chem., 1950, 185, 201) is specific for determining steroids with both an alpha-ketol grouping and a hydroxyl group at the C17 position, but as some steroids, such as aldosterone and corticosterone, have no 17-hydroxy groups they are not measured by this method. The method introduced by Mader and Buck (Analyt. Chem., 1952, 24, 666) based on the reduction of blue tetrazolium does not depend on the presence of the 17-hydroxy groups and can therefore be used for the estimation of steroids with only an alpha-ketol grouping at the C17 position in addition to those measured by the former method.

Urine for testing was hydrolysed with β-glucuronidase and extracted with chloroform; chromatography was performed on “florisil” columns, which were then eluted with chloroform, 4 per cent. methanol in chloroform, and finally 25 per cent. methanol in chloroform. The 24-hour urinary excretion of Porter-Silber chromogen (PSC) and of blue tetrazolium chromogen (BTC) was determined in 42 normal adult males, in eight patients suffering from various endocrine diseases, and (after the intravenous infusion of 25 units ACTH (corticotrophin)) in five male patients with possible adrenal insufficiency. In all these groups the correlation between urinary PSC and BTC excretion as measurements of adrenocortical function was poor. The authors consider that “it is doubtful [whether] urinary BTC is as specific a measure of urinary adrenocortical metabolites as is urinary PSC”.

T. D. Kellock.


The authors describe five cases in which patients receiving long-term steroid therapy for rheumatoid arthritis developed symptoms of “steroid pseudoarthritis” [which is the same as the hypercortisonism described by Slomcumb and others (Ann. intern. Med., 1957, 46, 86; Abstracts of World Medicine, 1957, 22, 50)]. This syndrome manifests itself in periods of restlessness, asthena, pains in the muscles, bones, joints, and tendons, and memory defect. The condition can be distinguished from rheumatoid arthritis by the absence of signs of articular inflammation and should be treated by gradual withdrawal of hormone therapy.

Oswald Savage.
Risk of Tuberculosis in the Corticotherapy of Malignant Blood Diseases. (Sur les risques de tuberculose dans la corticothérapie des hémopathies malignes.)

The risk of the development of widespread tuberculosis in cases of Hodgkin’s disease and acute myeloid leukaemia treated with cortisone is stressed by the author’s experience of eight cases in which this occurred. A negative tuberculin reaction may give false reassurance, and the tuberculous disease is commonly unnoticed until necropsy. Isoniazid alone appears to provide ineffective antibiotic cover, and should be given in combination with streptomycin and PAS in large doses during corticotherapy in such cases.

*J. Robertson Sinton.*

Corticosteroids in the Aqueous Humour of the Rabbit Eye.

Analysis of aqueous humour showed that, in addition to the hydrocortisone previously shown to be present in the rabbit aqueous humour, there is another substance in a concentration of 1.0 mg/l or less, the chromatogram of which gives a positive blue-tetrazolium test. It appears to be highly non-polar compared with the known corticosteroids, but is not identifiable with any of these.

*E. S. Perkins.*


In this study of adrenocortical function, reported from Wayne State University College of Medicine, Detroit, the authors were concerned largely with the problems of apparent resistance to exogenous ACTH (corticotrophin). In the tests described 100 units of a high potency ACTH-gel was given intramuscularly, and the criterion of response was the rise in urinary 17-hydroxycorticosteroid excretion. Previous studies had shown that this is normally 13-8 mg for adult males and 10 mg for females in the 24 hours.

In 32 control subjects in the present study there was a mean rise in hydroxysteroid excretion of 19 mg. (range 5.5 to 39.4 mg). In the steroid-induced unresponsive-ness of patients who had received long-term corticoid therapy, no rise in 17-hydroxysteroid excretion occurred until the second or third day. In two out of three cases of Cushing’s syndrome the rise was well above the normal. A patient with panhypopituitarism who had been main-
tained for 3 years on ACTH had a normal response to the test, but only three out of five patients with myxoedema responded normally.

The authors have encountered only five cases of apparently inadequate response in otherwise normal subjects. Two of these were found to be due to the use of ACTH of low potency, while acquired unresponsiveness to two types of ACTH was demonstrated in a third case. It is suggested that the intramuscular test is comparable in reliability to the intravenous test, provided that material of established potency is used.

*C. L. Cope.*


