of the glasses; the patient has to develop a "rubber-neck", and many of them do so readily.

Patients will sometimes come to you with the complaint that the glasses given them by an ophthalmologist have a fixed focus. There is truth in this. Most of them—though not all—have lost all power of accommodation after the removal of the lens. It is well to explain this and to point out that to get glasses for all intermediate distances means a great addition of trouble and expense; they will wind up by having a lot of glasses tied round them like the White Knight had other property, till their possessions become a nuisance. A pair for distance and another for reading should satisfy most people, though if they want an intermediate glass for some special purpose such as music or cards, these can easily be supplied; but lay stress on the fact that one pair of glasses will only work for a special range. Luckily the distance glasses suffice for anything from twenty feet upward and are quite helpful for intermediate distances, though the sharp cut accuracy of good focus is, of course, lost. The readers should serve for most near work if the patient will bring his head down to the necessary distance.

In conclusion, I would like to say to you that to my mind, the most important advice one can give a patient after a cataract extraction is to protect his eyes for some months from chills and especially from those due to wind. I am more afraid of wind than I am of sun, dust and cold put together, and I never fail to urge on every patient the necessity of wearing efficient goggles for months after an extraction and until the eye has thoroughly settled down. In the house he can wear what he likes or rather what he finds most comfortable, but never let him go out of doors for the first few months without carrying his goggles with him and putting them on whenever he is in the slightest degree of doubt.

WHAT DO WE MEAN BY RHEUMATISM? *

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The term "Rheumatism" is loose, indefinite and unsatisfying. "Acute Rheumatism" is applied alike to Rheumatoid Arthritis in its active phase, and to Rheumatic Fever. "Chronic Rheumatism" may imply anything between the wide ranges of generalised Fibrositis and Hypertrophic Osteoarthritis of the Hip. To remedy these defects it would seem desirable either to qualify in such a manner as to avoid ambiguity, for example, Cardiac Rheumatism and Muscular Rheumatism; or else to employ formulæ which leave no reasonable room for doubt. There is no excuse for those who claim to be teachers of the subject not to be able to mentally pigeon-hole 90 per cent. of Rheumatic or Joint Cases. It matters little what term is used to signify a given biochemical or clinical type provided that the name used denotes to the mind of the user something definite and that which he is able to describe to others by means of a cut-and-dried model. Such phrases as "Arthritis of Unclassified Origin" are definitely destructive in their appeal to searchers after the truth.

*A modified form of a lecture given at the Royal Mineral Water Hospital, Bath, on the 13th May, 1933, under the auspices of the Post-Graduate Association.

While there is much to be said against grouping of joint diseases on an etiological basis, in that etiology is by no means straightforward in every instance, yet by taking etiology as the common denominator it is possible in a large measure to correlate Joint Diseases and Rheumatic Diseases, thus:—

Joint Diseases.

(1) *Infective*:—

Arthritis persisting after
Rheumatic Fever and
Scarlet Fever.
Rheumatoid Arthritis.
Focal Arthritis.
Ankylosing Spondylitis.
Specific Arthritis (pneumococcal,
tuberculous, etc.).
Toxic Arthritis (dysenteric, an-
aphylactic, etc.).

(2) *Metabolic*:—

Menopausal Arthritis.
Scorbutic.
Hæmophilic.
Gout.

(3) *Degenerative*:—

Hypertrophic Osteoarthritis.

(4) *Mixed*:—

Arthritis of mixed origin.

(5) *Neuropathic*:—

(Charot's arthropathy intermit-
tent hydrarthrosis, etc.)

Rheumatic Diseases.

Rheumatic Fever.
Subacute Rheumatic Infection.

Rheumatoid Arthritis.
Focal Arthritis.
Ankylosing Spondylitis.

Menopausal Arthritis.

Hypertrophic Osteoarthritis.

Arthritis of mixed origin.
Fibrositis and Bursitis.
Panniculitis.

Rheumatic Fever.

An acute or subacute specific disease characterised by myocardial infection, the results of which are often permanent, by fleeting arthritis, and pyrexia of varying degree.

The essential lesions are myocardial, the tissue reaction is specific, and streptococci are thought to be the incriminating organisms.

There is no occasion to go into the question of rheumatic fever in detail; first of all, because the clinical features of rheumatic fever are well known to most, secondly because there are many textbooks on the subject, and thirdly, because the general conception of rheumatic fever and its less fulminating form, often known as "subacute rheumatic fever", is universally accepted.

Subacute Rheumatic Infection.

Clinically this is a "Tauchnitz edition" of rheumatic fever de luxe. Arthritis is generally in abeyance and cardiac lesions are either suspect or latent.

To amplify somewhat: the patient may or may not have reached the state of rheumatic fever in the past. There are subjective symptoms rather than physical signs. The cardiac lesions, if present, appear to be of some standing. Arthritis and pyrexia are in abeyance, though transient joint pains and an occasional elevation of temperature occur.

Diagnosis from fibrositis or toxic states is not always easy. An increased sedimentation rate and a marked bath reaction usually clear the diagnosis.

Rheumatoid Arthritis.

Rheumatoid arthritis is a systemic disease of unknown origin with deviation from the normal in both biochemical and metabolic aspects, though infection is thought to be an essential factor. The main manifestation is a non-suppurative polyarthritis of subacute or chronic type which tends to deformity of varying degree and expression.

Although remission is a feature, progression is usual, joints apparently quiescent and others hitherto immune being attacked as time proceeds, active infection ceasing in any given joint only when there is no more cartilage to be destroyed.

The synovial membrane is the site of attack, and muscle and tendon contraction evoked by painful stimuli may lead to obliteration of joint surfaces and fusion ankylosis; or else, especially in weight-bearing joints used excessively, a villous reaction occurs with formation of low grade granulation tissue, leading to erosion of the cartilage and adhesions, at first fibrous and later bony.

Sex; out of 2,283 consecutive cases in this hospital⁽¹¹⁾ 926 were males and 1,357 females, a proportion of 9 men to 20 women when adjustment for the disparity in numbers of male and female beds is made.

Etiology; streptococci are considered by many to be the invading organisms but much remains to be done to establish this as an indisputable fact. There are those who consider that infection is an entirely secondary affair to other factors of unknown origin. It is not improbable that an aggregation of factors conspires to reduce the individual's immunity to such an extent as to allow upstart organisms to profiteer and to make a corner in joints. Whatever these factors may be (and the mosaic is not necessarily constant) there is reason to suppose that the combination of physical and emotional stress is a potent one. It has been suggested that one of the reasons why women are more prone to rheumatoid arthritis than men is because, not only are they more emotionally unstable, but their every-day life is more subject to emotional strain than that of men.

In the 2,283 cases referred to above, most of the males were manual⁽¹¹⁾ labourers exposed to the damp—either above or below ground, while a corresponding proportion of females affected occurred in those engaged in home duties⁽¹¹⁾ only. It was found, however, that those engaged in exactly the same occupations were affected in the same way by types of rheumatic disorders other than rheumatoid arthritis, to wit; osteoarthritis, fibrositis, and sciatica.

Systemic disturbances are manifold. In cases under observation ⁽¹⁰⁾ pyrexia occurred in 68 per cent., tachycardia in 66 per cent., carditis in 4⁽⁶⁾ per cent., subcutaneous nodules ⁽⁴⁾⁽⁶⁾⁽⁹⁾ in 6 per cent. and enlarged spleen in 21 per cent.

Anæmia is usual, the hæmoglobin often being under 70 per cent., and the red count rarely normal. Leucocytosis occurs in the earlier stages but is replaced eventually by leucopenia with a relative increase in lymphocytes. The sedimentation rate is increased throughout the active phase of the disease and there is an absence of free hydrochloric acid in the stomach in over 20 per cent. of cases⁽¹⁰⁾. The basal metabolic rate is increased in the early stages but eventually sinks to below normal, when subthyroidism is apt to occur.

The typical picture of rheumatoid arthritis from the arthritic aspect is a fusiform swelling of the smaller joints with enlargement of the corresponding lymph glands.

The attack rate⁽¹⁰⁾ shows the wrist and finger joints to be affected in nearly 80 per cent. of cases, the knee and elbow coming next in order of frequency.

Muscular wasting is marked; especially that of the interossei, opponens pollicis, abductor pollicis and the extensor brevis pollicis, in the hand; the extensors of the forearm; the long head of the triceps and supra spinatus at the shoulder joint; and the vastus internus at the knee joint.

Special deformities are liable to occur. In the hand, a claw-like deformity with ulnar deviation; at the wrist, wrist drop and further ulnar deviation; at the elbow joint, pronation and flexion; at the shoulder joint, adduction; at the hip, adduction; at the knee, flexion and outward and backward subluxation of the tibia and fibula; at the ankle joint, eversion and abduction, with flat foot.

The skin is atrophic and glossy.

To rheumatoid arthritis occurring under the age of 6 years the name of Still's disease is usually acceded. That occurring in association with psoriasis is often called arthropathia psoriatica⁽¹²⁾. The exhibition of arthritis may be florid as is not unusual in children and women in the child bearing period, or less exuberant when affecting those of the sixth and seventh decades. It is not possible to estimate the extent of disease in any given instance without biochemical assessment, as a clinically mild type may have profoundly disturbed metabolism.

Focal Arthritis.

That type of arthritis responding immediately and completely to removal of sepsis making its appearance just prior to arthritic symptoms.

The pathology of this is obscure and possibly concerns itself with tissue affinity.

Focal arthritis is exceedingly rare.

Ankylosing Spondylitis. ⁽¹⁾ ⁽²⁾

A disease of unknown origin practically confined to the male sex, in which the spinal column becomes rigid, generally in the flexed position, with thoracic immobility, loss of lordosis and often involvement of shoulder and hip.

While pyrexia and an increased sedimentation rate stamp the disease as an infective one, yet lowering of the calcium content of the blood with an increased blood phosphatase, porosis of the vertebræ and ossification of the spinal ligaments, (all criteria of disordered metabolism), support the view that porosis and sclerosis proceed "cheek by jowl" and that a compensatory mechanism is at work to bolster up the affected bones by ossification of the supporting ligaments.

Sex; the sex distribution⁽¹⁾⁽²⁾ is most marked as it is comparatively rare to find a young woman affected, though this does occur.

Ankylosing Spondylitis affects young males in particular though there are cases in which older men are affected.

Etiology; no occupational statistics have been calculated to show that any particular group of workers is affected more than another. In a small series under the writer's care a large proportion were seafaring men. This might be considered by many to suggest the possibility of the gonococcus as the incriminating organism and would fit in with the Continental view on the matter. In many cases, however, it is possible to exclude this as a determining factor.

The clinical picture is dominated in measure by the deformity of ankylosis. The facies is somewhat like that occurring in encephalitis lethargica, the chest cannot be expanded, there is a dorsal kyphosis with loss of lumbar lordosis, and the hips tend to become fixed in flexion. The neck becomes rigid with the chin depressed on to the chest. Eventually the patient may become entirely rigid. Pain is an early symptom and persists during movement of the joints in the active stage.

It would seem that the sacroiliac joints are affected very early and radiograms taken of cases coming under observation for the first time show fusion of these joints. It must be remembered, however, that many cases have vague symptoms over a series of years before actually seeking medical advice. This was so in a personal case of a young woman student, who had had back-ache for 4 to 5 years before seeing a physician. Almost the next complication is an inflammation of the posterior articular joints followed by fibrosis and then calcification. This leads to the "tramline" appearance shown in radiograms.

In the early stages of lumbar involvement the lumbar bodies take on a waisted appearance with splaying out of their articular margins and marked porosis. Later fibrosis and calcification spread over the bodies of the vertebræ so that there then occurs a typical "bamboo"⁽¹³⁾ appearance of the vertebræ. The intervertebral discs are not affected primarily as in hypertrophic osteoarthritis of the spine but, nevertheless, tend to become lenticular in appearance and the linking between the adjacent vertebræ is often mistaken for osteophytic outgrowth. One or more of the large trunk joints become affected in the course of the disease, and radiograms show ulceration of the cartilage at an early stage.

There occasionally occurs a polyarthritis in addition to the affection of the trunk joints and spine and it is not infrequently difficult to decide if the condition

is one of rheumatoid arthritis with involvement of the spine or spondylitis with involvement of the peripheral joints. Indeed, it is not yet certain whether or not spondylitis is an entirely separate entity from rheumatoid arthritis. The increased blood phosphatase and the fact that men are almost universally the subjects of spondylitis suggest the latter.

Menopausal Arthritis. ⁽¹⁴⁾

This condition is not universally accepted as a clinical entity. It is practically confined to the knees of women at the climacteric. There are general signs of subthyroidism, the joints creak and are stiff and painful.

The pathology would seem to be comparable to that of hypertrophic osteoarthritis of the hips. The synovial membrane is dry, the joint space is diminished and osteophytic lipping takes place in the inferior aspect of the patella and at the margins of the tibia. A villous reaction, however, is by no means an uncommon prelude to osseous changes, and is not to be wondered at, seeing the amount of movement that is required of the knees in ordinary life.

Hypertrophic Osteoarthritis.

A disability affecting those of middle and late life. "Wear and tear" seem to be the determining factors, though the disease may be familial in a minor degree, for example, Heberden's nodes. This disorder affects particularly the hips and spine of men, the knees of women and the terminal phalangeal joints in the hand, especially in the so-called leisured classes.

Pathological and clinical factors must be considered side by side. Lack of nutriment, either synovial or arterial, leads to devitalisation of the articular cartilage (the intervertebral discs in the case of the spine). As a compensatory mechanism movement of the joint is diminished. The patient experiences stiffness and restriction of movement. If this is persisted with, however, osteophytic outgrowths occur in an attempt to limit movement further. If movement is still persisted in, there occurs erosion of cartilage, spasm of muscles and marked pain on movement.

Sex⁽¹¹⁾; in regard to the hips and knee; in 705 consecutive cases of hypertrophic osteoarthritis 521 were males and 184 females, a proportion of 9 males to 5 females when the inequality in the numbers of available male and female beds is adjusted. In this series, the hip was affected proportionately in 12 men to 6 women and the knee in 2 men to 5 women. In regard to the spine; a mild degree of hypertrophic osteoarthritis would seem to be a degenerative change so common in manual workers and athletes as to be almost as normal as baldness or grey hair. Of 100 consecutive cases of men over 55 of the working classes examined by X-Ray, somewhere about 65 per cent. showed degenerative changes in the spine irrespective of their complaints when entering the hospital wards.

The occupation in the series referred to showed that those affected were chiefly manual workers exposed to damp both above and below ground among males, and those engaged in home duties among females⁽¹¹⁾.

There are no systemic features other than those commensurate with the not unusual accompaniments of arterio sclerosis, gout, and obesity. The sedimentation rate is not increased and the blood count is normal. Pain, however, may undermine the general health to a marked degree.

Hypertrophic osteoarthritis of the hip leads to stiffness, pain on movement, and limitation of flexion and abduction.

The gluteal fold is diminished owing to muscle wasting and the patient experiences difficulty in reaching down to lace his shoe and in mounting a high step. Abuse of the joint beyond its capacity results in continuous pain and eventually greater restriction of movement. The second hip is liable to be involved by the same morbid process if too much strain is thrown on it. It is not improbable that effusion into the joint cavity occurs more often than is realised. Static scoliosis occurs secondarily to arthritis of the hip.

In the knee joint the patella rides closer to the femur than normally and effusion is apt to occur if the joint is exercised unduly. If movement is persisted with, the synovial membrane becomes villous and hypertrophied. Softening of the crucial ligaments allows outward and backward subluxation of the tibia and fibula.

Rigidity is the end result of hypertrophic osteoarthritis of the spine. Backache is often prominent and may be largely muscular but the posterior roots may be affected by pressure.

Arthritis of Mixed Origin. ⁽⁸⁾

By "mixed arthritis" is meant that arthritis in which more than one of the elements of infection, of disordered metabolism or of degeneration exceed the pattern exhibited by a simple case.

In cases under consideration it is not unusual to find an infective element as evidenced by pyrexia, leucocytosis and an increased sedimentation rate, together with perhaps biochemical evidence of disturbed metabolism such as a high blood uric acid content; or again, perhaps hypertrophic osteoarthritis of the hip joints with an increased blood uric acid and the typical potholes of gout in the finger joints; or again, hypertrophic osteoarthritis of the knee and finger joints with a superimposed infective element in the matter of joint effusion with heat and synovial thickening.

The various syndromes of different types of arthropathy may dovetail one into the other in such a manner as to occlude the possibility of determining which is the essential or outstanding abnormality. It is true that most of these cases should be dubbed infective, metabolic, or degenerative, but until such time as we have more knowledge of each group of rheumatic disorders it would seem wise to designate these conditions as being mixed so as not to vitiate the clear-cut entities already discussed.

It is obvious, therefore, that there can be no statistical data available as the recognition of mixed arthritis is still *sub judice*.

Hypertrophic osteopulmonary arthropathy is another condition which can be included under the heading of "mixed arthritis".

Fibrositis.

This is generally stated to be a chronic inflammation of the fibrous structures of the body such as the fasciæ, aponeuroses, tendons and sheaths of muscles, leading to stiffness and pain and such localised symptoms as lumbago and stiff-neck.

To get a working hypothesis for the treatment of such a condition it is necessary to visualise many etiological factors. While it is true that many smouldering infections of parvenu pathogenicity are evidenced by the cellular response to be seen in sections of tissue showing fibrositis, yet the intense fibrous reaction of Dupuytren's contraction, for example, is more likely to be evoked by trauma and toxic products than by bacterial stimuli. Moreover, given that scar tissue exists this must remain as a vulnerable site for toxic products circulating in the blood stream and for changes of atmospheric pressure and strain.

Sex; of 1,086 cases⁽¹¹⁾ of fibrositis, 740 occurred in males and 346 in females, or 3:2 when the disparagement in the number of available beds is adjusted.

In regard to the age of onset of fibrositis; it is generally believed that middle and late life are the periods of attack. It would seem, however, that fibrositis often occurs in childhood, as evidenced by the small millett⁽³⁾ seed granules to be discovered in the subcutaneous tissue lying over the vertebral column and at sites exposed to pressure such as the olecranon process. It is not improbable that in many cases the early mild inflammatory stage, which results eventually in scar tissue, is laid earlier in life than is generally supposed and that symptoms are re-awakened in middle life by intercurrent toxæmias.

Various authorities have described sections of nodules occurring in fibrositis. Many of these nodules, however, which seem to be intramuscular, and are palpable in the region of the gluteal muscles are not intramuscular at all but are masses of fat in the subcutaneous tissue. On the other hand, small aggregations of fibrous tissue do occur along the insertion of various muscles such as the levator anguli scapulæ, and have been removed for section from the neighbourhood of the olecranon process.

In the series referred to⁽¹¹⁾, fibrositis affected especially manual workers exposed to damp both above and below ground and females occupied in home duties.

Systemic disturbance is conspicuous by its absence except in cases where there is marked primary toxæmia. The sedimentation rate is normal and there is no pyrexia.

Fibrositis may be more or less generalised but is apt to affect especially the aponeurosis of the scalp, the areas about the ligamentum nuchæ and the adjacent aponeuroses, the levator anguli scapulæ, trapezius, the fasciæ of the costal muscles, and that of the lumbar muscles and glutei.

The local forms of fibrositis are periarticular, simulating arthritis, and neuritic evoking pain of a referred nature such as neuralgia of the scalp and sciatica.

Bursitis can be regarded as a variation of periarticular fibrositis. There is no occasion to go into the well-known varieties such as subacromial and sub-deltoid bursitis but it should be noted that the variety which attacks the olecranon bursa is always highly suggestive of gout.

Panniculitis. (5)

A painful condition of the panniculus adiposus either in diffuse form in which case distribution is general, girdle and garter, often associated with endocrine imbalance; or else localized. Dercum's disease is often regarded as a patchy form of panniculitis.

Histology shows the subcutaneous distribution of fat to be increased and the containing envelopes to be engorged. The subcutaneous nerves are in a state of interstitial neuritis and elastic fibres are replaced by fibrous ones. Pathological factors may be two-fold, either an initial increase of fat due to subthyroidism or general obesity, or, failure of blood supply in virtue of thickened peripheral vessels.

Sex; there are no statistics available to demonstrate sex incidence, but panniculitis in women is exceedingly common and the reverse holds good in men. The most marked cases in men in one's personal experience have usually occurred in Hebrews and Russians. The fact that Jewish women, and children with diabetes well established in the matter of insulin medication, are especially affected, suggests that an endocrine factor may play an important rôle. Mucous colitis occurs commonly in the subjects of panniculitis.

The subjective symptoms are marked: sore skin, fatigability, inability to tolerate heavy clothing, increased endothelial permeability and anhydrosis. In a full blown case girdle obesity is a feature, the upper arm being leg-of-mutton in form and the buttocks fat, dimpled and cyanosed. Folds of subcutaneous tissue overhang the waist line producing a Russian torso effect. The abdomen is often prominent and undulating. The garter area in the lower leg has a filled in appearance and the lower leg is more cylindrical than normal, with a well-marked line of demarkation at the maleoli. The skin is atrophied, sensitive to touch, somewhat cyanosed, and so tightly stretched over the subcutaneous tissues that it cannot be picked up and separated from these.

REFERENCES.

- (1) Buckley. "British Medical Journal," 1931, Vol. 1, p. 1108.
- (2) Buckley. "Proceedings of the Royal Society of Medicine," Vol. XXVI., No. 2, Section Phys. Med.
- (3) Coates. "British Medical Journal," March, 1925.
- (4) Coates. "Medical Journal and Record," October, 1926.
- (5) Coates. "Medical Journal and Record," October, 1927.
- (6) Coates. "British Medical Journal," January, 1930.
- (7) Coates. "Proceedings of the Royal Society of Medicine," Section Balneology. Vol. XXIII. March, 1930.
- (8) Coates. "Acta Rheumatologia. No. 15. December 1932.
- (9) Coates and Coombs. "Archives of Disease in Childhood," August, 1926.
- (10) Coates and Delicati. "Rheumatoid Arthritis." London, 1931.
- (11) Coates and Delicati. "Acta Rheumatologia." No. 15. December, 1932.
- (12) Garrod and Evans. "Quarterly Journal of Medicine." Vol. 17. No. 66. January, 1924.
- (13) Krebs. "Deut. Med. Woch." 1930. Nos. 6 and 7.
- (14) Llewellyn & Jones. "Fibrositis." London, 1915.