out qualitative changes may occur; in carcinomatosis, but especially in myelosclerosis, a leuco-erythroblastic anaemia is common. This is marked by a normochromic normocytic anaemia with a moderate reticulocytosis and normoblastosis; the leucocytes are commonly reduced in numbers, but the differential count shows a "shift to the left" of the granular cells from a high percentage of segmented neutrophils to an occasional myeloblast with a regular reduction in the proportions of the intermediate classes as their maturity diminishes (see Fig. 1); there is thrombocytopenia. Leuco-erythroblastic anaemia is considerably less common in myelomatosis; in this disease the leucopenia is often more striking than the anaemia or the thrombocytopenia, but occasionally the blood is flooded with the proliferating cells to cause a "plasma-cell leukaemia."

Associated with Splenomegaly

Leucopenia, often with thrombocytopenia, marks many diseases in which there is massive splenomegaly. Examples in which this association is common are congestive splenomegaly (Banti's syndrome), Felty's syndrome, and Gaucher's disease. It is occasionally observed in Hodgkin's disease, Boeck's sarcoidosis, and various forms of reticulosis and reticulosarcoma causing outstanding enlargement of the spleen. This symptom-complex is sometimes termed secondary splenic neutropenia; a primary variety has been recorded in which the excised spleen shows only non-specific reactive hyperplasia.

Although splenectomy is usually followed by restoration of the blood count to normal, the exact connexion between the spleen and the leucopenia is uncertain. Examination of the bone marrow shows hyperplasia of the myeloid series, and thus distinguishes these cases from those in which leucopenia is due to aplasia. It has been suggested that the spleen exerts some inhibitory influence upon discharge of leucocytes from the bone marrow.

Immuno-neutropenia

This ungainly term describes a variety of neutropenia apparently due to antineutrophil substances of the immune-body type. Moeschlin and Wagner established this mechanism as operative in agranulocytosis due to amidopyrine*; the leucocyte antibody acts in the presence of antigen as an agglutinin, and destruction of agglutinated neutrophils is thought to proceed in the lungs. In agranulocytosis of this type the leucocyte count falls precipitously within an hour or two of taking the causative drug; figures of 200-300 per c.mm. with absence of granular cells are not rare. Bone-marrow changes vary with the duration and the intensity of the leucopenia; when short and mild most of the myeloid series, except the mature granulocytes, are well represented; with increasing severity and duration there is progressive disappearance of this series, starting with the most mature elements and finally leaving the bone marrow depleted. These changes, formerly attributed to maturation-arrest, are now thought to be due to active depletion of the bone marrow by the intense peripheral destruction of granulocytes.

The importance of this cause of neutropenia is not yet known. It may well be responsible in acute diffuse lupus erythematosus in which pancytopenia is the rule; it has been recorded in primary atypical pneumonia. It seems probable that it explains the common agranulocytosis of explosive onset seen not only after amidopyrine but with sulphonamide, thiouracil, troxidone, tripeleminamine, and many other drugs.

Cyclical or Periodic Neutropenia

This is a rare disorder, often starting in infancy, in which periods of extreme neutropenia alternate with periods in which the leucocyte count is within normal limits. There is no anaemia or thrombocytopenia, and bone-marrow

examination shows normal granulopoiesis. The leucocyte count will often show a pure neutropenia, sometimes with an absolute increase in lymphocytes and eosinophils. During the neutropenic phases infective phenomena are common. The cause is unknown and the course extends over many years; in some instances spontaneous recovery occurs.

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PAEDIATRICS AND CHILD HEALTH IN FRANCE

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In France, children's diseases occur against a background which is in most respects similar to that in this country, but there are certain differences of climate, race, and distribution of population, while social and economic factors are of even greater importance. The area of France is more than twice that of Great Britain, but the population is only 42 millions, of whom a considerably smaller proportion live in towns and suburbs; so the problems of rural medicine are important. Nevertheless, the highest infant mortality rates occur in the industrial and densely populated regions of the Nord and the Pas-de-Calais. Until 1941 the population had been declining, as a result of the low birth rate, for nearly a century, but this tendency has now been reversed by the generous maternity benefits and family allowances under social security, and in 1951 the birth rate was 19.4 and the natural increase in population 6.1 per 1,000. There is, in addition, a certain amount of immigration, and at present about two million foreigners are in the country, of whom the Algerians (400,000) form the largest group.

Wages are low, and the cost of living is higher than in this country, but wage-earners with children are greatly helped by the "allocations familiales," which often exceed the father's wages. There is a fixed payment for a child born within two years of marriage, a monthly allowance which reaches its maximum for the second and third children, and an additional payment if the father is the only wage-earner in the family. Examples of the family allowances are:

No. of Children	Mother Working	Mother at Home
1	—	1,725 fr. per month
2	4,385 fr. per month	11,285 " " "
3	11,000 " " "	19,625 " " "
4	17,610 " " "	26,235 " " "

**Acta haematol., Basel, 1952, 8, 29.*

Nutrition and Diet

Since the war food has been plentiful, and a high proportion of the family income is spent on it, so that malnutrition and deficiency diseases are uncommon, but the French children are shorter and considerably lighter than British children of the same age (see Table I). No doubt racial

TABLE I.—Average Heights and Weights of Boys and Girls

Age	Height (cm.)		Weight (kg.)	
	French	British	French	British
3 years	87	92	12.6	15.0
6 " " " " ..	106	113	17.0	20.3
10 " " " " ..	129	135	25.2	29.6
15 " " " " ..	151	161	44.4	51.0

factors account in part for these differences, at least in height, but the figures suggest that either British children are unduly fat or there is a considerable amount of sub-optimal nutrition in France. If this is so, it may be because children of school age spend more time indoors and less on games, because the national dietary (with a high proportion of bread and meat, and large infrequent meals) is not so suitable for children, and because the consumption of milk is lower in France. Milk is not provided free in schools, and its hygienic quality leaves much to be desired in many districts, so that it is customarily made safe by boiling, with consequent loss of palatability. It has recently been made compulsory in towns of more than 20,000 inhabitants for milk to be pasteurized and sold in sealed bottles.

Social Factors

The standard of housing accommodation is generally lower than in this country, and serious overcrowding exists. This and alcoholism are the greatest social problems in France to-day, and they lead to a large number of broken homes and a high incidence of psychiatric disorders.

Education is compulsory between the ages of 6 and 14, and school subjects are similar to those taught in this country, but there is less physical education, and no milk or subsidized meals are provided. Children go to school on Saturdays, but have a half-holiday on Thursdays, because it is thought that a break in the middle of the week is better for them than a long week-end.

Incidence of Disease

It is difficult to judge the relative incidence of disease in the two countries in the absence of morbidity figures, but it is the impression of clinicians who have worked in both countries that the general pattern is the same. However, it seems that juvenile rheumatism and coeliac disease are more frequent in Great Britain, as are respiratory infections of all kinds. The latter are no doubt due largely to climatic and atmospheric differences, but the better heating of buildings in France may also be a factor. Tuberculosis, on the other hand, is more frequent in France, where, in 1951, the death rate was 60 per 100,000, compared with 31.5 here. Although it is difficult to be certain, because tuberculosis is not notifiable in France, the morbidity rate is probably higher also, and this and overcrowded living conditions account for the higher death rates from tuberculosis among children (Table II).

TABLE II.—Death Rates from Tuberculosis in 1951, per 100,000

Age	France	England and Wales
0-1 year	65	14.7
1-5 years	25	15
5-10 " " " " ..	8	4.7
10-15 " " " " ..	7.5	4.4

The infant mortality was 41.5 per 1,000 live births in 1951, compared with 29.7 in England and Wales, and analysis of the causes shows that "prematurity" takes first place in both countries and pneumonia comes second, but congenital malformations account for 4.34 per 1,000 in England and Wales and only 2.89 per 1,000 in France.

Another interesting comparison is given by the figures for fatal accidents in 1950 (Table III). The much higher road

TABLE III.—Fatal Accidents in 1950

Cause	France (Population 42 m.)			England and Wales (Population 44 m.)		
	0-1 Year	2-5 Years	6-15 Years	0-1 Year	2-5 Years	Years
Motor vehicle ..	5	47	77	3	265	430
Poisoning	15	21	19	8	53	15
Other accidents ..	307	937	551	750	565	464
Total	327	1,005	647	761	883	909
	1,979			2,553		

deaths in this country are no doubt due largely to the fact that a greater proportion of children live in built-up areas, but straighter roads and the absence of ribbon development in France are contributory factors.

Medical Arrangements

Sick children are first treated either by the family doctor or by a paediatrician, to whom the family have direct access and of whom there is one in most towns of 20,000 or more inhabitants. There are approved scales of fees, and patients insured under the social security scheme can claim back 80% of these fees and the same proportion of the cost of medicines; but the fees actually charged are usually somewhat higher than those approved. Also 80% of the cost of hospital treatment is reimbursed, except in case of maternity, infectious diseases, and illnesses lasting more than six months, when it is 100%. People who are not insured pay according to their means, assessed by the hospital's social service, up to the full cost, which is between £2 and £3 a day in the public hospitals. This figure includes drugs and operations, but laboratory and radiological examinations and consultations are extra. Children's hospitals and the children's services of general hospitals provide 0.24 bed per 1,000 of the population, and private clinics 0.019; the main differences from the hospitals of this country are that they admit children up to the age of 16, and that a greater proportion of the accommodation is in children's hospitals, many general hospitals having no children's wards. Daily visiting is the rule.

The hospitals have for many years ceased to depend on voluntary contributions, but they have not been "nationalized" and are not controlled in any way by the Ministry of Health. Instead, they are administered by the "Assistance Publique" of each town or département, and are generally self-supporting by virtue of the contributions they receive from their patients, though in some cases they may be subsidized by the municipality. The medical staff are unpaid, or receive only a small honorarium, and they attend in the mornings only, except for one or more "internes de garde," who are on duty all day and sleep in the hospital. Nurses are already trained and have obtained their State diploma when they come to work in a children's hospital, but the training lasts for only two years and the course is the same as for general nursing. There is, however, an additional "Diplôme d'État de Puéricultrice," instituted in 1947, which may be taken for a further year's study. Hospital nurses are usually non-resident, and their duties are arranged not in two shifts but in three. Otherwise, the personnel of a hospital is much the same as in this country, except that there is perhaps a smaller proportion of auxiliary workers such as physiotherapists, speech therapists, orthoptists, and clerical staff.

Convalescent homes number 300, with more than 9,000 places, and there are nearly 34,000 beds in establishments concerned with the fight against tuberculosis. Provision for chronic sick and handicapped children is not as good as in this country, and only a few of them, in institutions like the Hôpital Raymond-Poincaré, at Garches, Seine-et-Oise, receive formal education.

Preventive Services

The preventive and public health services, which have been greatly extended since the war, include antenatal, post-natal, and infant welfare clinics; additional maternity bene-

fits are paid to those who attend regularly and to mothers who breast-feed their babies. There are, however, no dietary supplements provided free or at reduced prices. Expectant fathers may attend antenatal clinics in many areas, to undergo chest fluoroscopy and a blood test; the same investigations are included in prenuptial medical examinations, which are compulsory throughout the country.

To combat further the infant mortality, of which prematurity is such an important cause, a network of premature-baby units, with a total of more than 1,800 cots and possessing 720 incubators, has been set up to cover the whole country. Transport arrangements are such that a premature baby may be quickly taken in a portable incubator, from wherever it may have been born, to one of these centres. The principal centre, at the École de Puériculture de Paris, has 55 cots, and in 1951 achieved the remarkable result of rearing 152 out of 198 babies weighing between 2½ and 4 lb. (1.2 and 1.8 kg.) at birth.

Infant welfare clinics now number 8,200 and fulfil much the same functions as in this country, but there is no distribution of welfare foods. The clinics are taken mainly by doctors who are also in practice locally, but there are 45 full-time medical officers, who are mainly occupied travelling with mobile "consultations itinérantes," which visit villages not large enough to have a fixed centre. Corresponding to health visitors are the "assistantes sociales," whose training consists of one year's medical study (unless they are already trained nurses) and two years' social study. Preventive inoculations are given at these clinics, and also by private doctors and at hospitals, against smallpox, diphtheria, tetanus, typhoid, pertussis, and tuberculosis. The first three are obligatory, and B.C.G. vaccination is now compulsory for the following categories: (1) All children born in 1938 and 1939 who are still tuberculin-negative. (2) Children admitted to residential or day nurseries. (3) Those exposed to infection in the home (where the source of infection is receiving sickness benefit). (4) Teachers and other persons employed in schools. (5) Medical and dental students, nurses, and all other hospital personnel. (6) Entrants to the armed Forces.

It is intended gradually to extend the age groups for compulsory B.C.G. vaccination until in 1957 all children will be vaccinated in the year in which they reach their sixth birthday. Removal from infectious surroundings to a foster-home or to a "préventorium" or "aérium" is arranged two months before vaccination, and the children remain away until the tuberculin test becomes positive, or until after they have been vaccinated a second time if it is still negative after three months.

The vaccine is prepared at the Institut Pasteur in Paris, where Dr. Guérin is happily still living.

Homeless Children

In consequence of the housing shortage, alcoholism, and other causes, there are a large number of broken homes, and many children are abandoned by their parents, either permanently or temporarily, and have to be taken into care by the State. In 1951, in the Département de la Seine alone, there were 27,263 such children, of whom 12,591 had been abandoned permanently (Lelong, 1953). Homeless children are received first at a "dispensaire de triage," where they undergo a full medical and psychiatric examination (the latter is particularly important, for many of the children are abandoned at a relatively late age, consequently there is difficulty in readaptation). Those who are not adopted privately are boarded out, where possible, under a "centre de placement familial surveillé," which is a group of foster-mothers, usually in a country district, round a centre of supervision. Foster-mothers are, in any case, subject to close surveillance by "assistantes sociales," who visit them at intervals of from one to six months, according to the age of the children.

Medical Education and Training

There are a number of important differences between the training of doctors in France and in this country. There is

not so much competition to enter medical schools, and in consequence less selection on entry, but about 50% fail the examinations in anatomy and physiology. Clinical subjects are studied from the beginning, and the minimum duration of the course is six years. After the end of their third year, students are eligible to compete for posts as "externes," when they are responsible for keeping the case-notes and carrying out such procedures as lumbar puncture in the wards of one of the teaching hospitals. From among the "externes," "internes" are chosen by competitive examination, and the duration of internship is four years. These posts are highly valued, and to have held one almost counts as a higher qualification, but their number is such that, at least in Paris, only 4% of students achieve internship. The time is divided into eight periods of six months each, which may be spent in as many different hospitals, and in as many different specialties, but students who have already decided to follow a special subject usually spend at least two years of their internship in that specialty. The duties of "internes" are similar to those of senior residents in this country, but they do not necessarily live in hospital, except when it is their turn to act as "interne de garde." There are no compulsory hospital appointments, and most students qualify without having been either an "interne" or an "externe," but all have to write a thesis. They are then granted the degree of "Docteur en Médecine"; the abbreviation Dr. is used, but not the letters M.D.

All the students spend six months studying paediatrics, followed by an examination, in their third clinical year, and there is a further optional term in the sixth year. Those who wish to specialize in paediatrics take a postgraduate course lasting four years which leads to the "Certificat d'Études Spéciales de Pédiatrie et Puériculture"; but those who have been "internes" or "chefs de clinique" (a higher hospital post corresponding to registrar) in an approved paediatric service are allowed to count that time towards the four years.

There are paediatric teaching departments in nine of the Paris hospitals, the principal ones being at the Enfants Malades, Trousseau, and St. Vincent de Paul. They are attended by students of the Paris Faculty of Medicine, and also by postgraduates from many European countries, as well as from the French colonies. The main provincial teaching centres are at Lille, Lyons, and Strasbourg. In Paris there is also the École de Puériculture, which trains doctors, nurses, students, and "assistantes sociales" in the various aspects of child health, has a large premature-baby unit and a breast-milk bank, and a ward for babies who are "feeding problems."

The International Children's Centre, founded in 1949 and supported by Unicef, is concerned with "all the problems pertaining to childhood with the exception of education." It holds conferences and postgraduate courses; conducts research into growth, vaccination, and immunization; has an excellent library; and publishes a monthly journal, the *Courrier*. There are six other paediatric journals published in France, and flourishing paediatric societies, which meet once a month, in Paris and other large centres, while the "Association des Pédiatres de la Langue Française" holds a congress every two years.

History

France has played a large part in the development of paediatrics, perhaps the greatest of any country. The Hôpital des Enfants Malades, Paris, founded in 1676, was the first children's hospital in the world, and now has 1,200 beds. The infant welfare movement is attributed to Budin, Professor of Obstetrics in Paris, who held his first clinic in 1892. The discoveries of Louis Pasteur led to the prevention of infectious diseases, and the principle of preventive isolation was established by Grancher. In the present century, perhaps the greatest advance has been the preparation of B.C.G. vaccine by Calmette and Guérin. France lagged behind other European countries in some aspects of public health between the two wars, but since 1945 great efforts have been made by the Ministry of Health and Population,

and the results are shown in the greatly improved infant and child mortality figures.

We acknowledge with pleasure the help we have received from Professors Debré and Lelong and members of their staffs, from Drs. Alison and Lotte, of the Institut National d'Hygiène, Dr. Frank Falkner, and the Librarian of the Centre International de l'Enfance. Above all, we are grateful to Dr. J. J. Kempton, who first suggested this study to us, for his constant help and encouragement. One of us (K.W.L.) wishes to thank the staff of the Hôpital des Enfants Malades for all the kindness shown to him during the tenure of his bursary, given by the Ciba Foundation and the Institut National d'Hygiène; and the Board of Governors of the Hospital for Sick Children, Great Ormond Street, for granting him leave of absence.

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REHABILITATING THE DISABLED

A B.M.A. REVIEW OF THE POSITION

At the invitation of the Interdepartmental Committee on Rehabilitation and Resettlement of Disabled Persons, the Council of the British Medical Association set up a special committee to prepare a memorandum of evidence. The committee of 17 members, under the chairmanship of Professor R. E. Tunbridge, of Leeds, was a highly expert body, including orthopaedic surgeons, directors of university or hospital departments of industrial health, medical officers to industrial rehabilitation units, a medical officer of health, medical officers to large industrial concerns, a regional psychiatrist, and four general practitioners from industrial areas. The committee also had the assistance of certain experts from specialized fields. The result of the committee's labours is now published as a report of Council. It is a thesis of 80 pages covering the whole subject and with many recommendations.¹

The Nature of Rehabilitation

The size of the problem cannot be gauged, but it is assumed in the memorandum that 25% of the patients passing through acute general hospitals could be helped by planned rehabilitation. Rehabilitation is an indivisible process; the whole man must be rehabilitated, including his emotional life and moral values. It is a question of team-work, involving not only medical but industrial and social skills, and especially the co-operation of the patient himself. The stages of acute illness, convalescence, and resettlement merge into one another. Nor can there be any real distinction between medical and industrial rehabilitation.

"In the opinion of the Council it is a special medical responsibility to ensure that the degree of invalidism during and after the illness, accident, or operation is minimal, and that the final degree of functional capacity attained should match the full potentialities of the individual. . . . Medical supervision continues to be necessary after active medical treatment has been completed. Indeed, there is no stage, short of complete recovery, at which the doctor could hand over all responsibility to non-medical personnel."

In the stage of acute illness the doctor will undertake active treatment; in the industrial rehabilitation unit he will supervise the patient's progress and advise on medical matters while other members of the team carry out their technical procedures. Social rehabilitation of the patient

also is important, and this is a medical responsibility, though the help of a social worker is invaluable.

The Resettlement Clinic

A comprehensive system in which the existing facilities are integrated is set out in the memorandum. The hospital or general practitioner may refer the patient to a resettlement clinic, through which the patient will proceed either to the industrial rehabilitation unit or some form of convalescence and back to his own work, or to different work, or to sheltered employment, or, if he remains seriously incapacitated, to home work. This resettlement clinic, within the N.H.S., should be an integral part of all major hospitals or hospital groups, and available alike to general practitioner or hospital staff. Its main function would be as a point of co-ordination for rehabilitation services and agencies inside and outside the hospital, a medico-social sorting centre, and a clinic for reference of cases. It would be staffed by a consultant, a general practitioner, an almoner, and a disablement officer, and the patient's doctor would be invited to attend the review of patients he had referred to the clinic.

Medical supervision is essential for giving purpose to convalescence. It is believed that some form of planned convalescence is needed by some 50,000 individuals every year. Planned convalescence will have a background of discipline. A patient normally engaged in heavy physical employment should receive during his convalescence a gradual reorientation of his outlook from that of an invalid to that of a responsible worker. At the resettlement clinic psychiatric advice should be available, as well as physical treatment, which must embrace medical gymnastics at this stage. The patient who needed still more specific post-operative measures would be prescribed a course at the industrial rehabilitation unit. "If the patient's rehabilitation has been satisfactory, he will be eager for resettlement."

The Return to Work

The assessment of the patient's ability to work must be a medical responsibility, undertaken in consultation with technical experts. Resettlement becomes more difficult with the segregation of industries in particular areas, so that there is no suitable alternative employment in the patient's neighbourhood; also with the increase in mechanization, which compels the individual to proceed at the pace of the machine. It is often found that a man can return to his old work if some readjustment of machinery is made. More imagination and initiative might be shown in this respect. Some account is given of sheltered employment, such as the Papworth Village Settlement, the Bargood factory set up by Austin Motors for disabled ex-miners, and the Scottish enterprise "Haven Products," a socio-medical experiment in industry. Day-occupation centres are also desirable for severely disabled persons too handicapped to be employed in sheltered industry. Work for the home-bound has two aspects, diversionary and productive, both of therapeutic value. A word is said about the disabled housewife who could be assisted through the welfare services of the local authority on a medical practitioner's recommendation.

The memorandum also deals with the special problems of resettlement in cases of tuberculosis, dermatitis, rheumatism, epilepsy, blindness, and deafness. Certain recommendations are made concerning certification. There should be a certificate of partial fitness. The D.P. forms might be simplified. The disabled persons register should be constantly reviewed. More disablement resettlement officers should be employed. The role of the physiotherapist, the occupational therapist, and the social worker is discussed. On the question of incentives it is recommended that the receipt of statutory benefits should be dependent on regular attendance for whatever form of treatment may be prescribed. Research is called for into methods of follow-up, classification of disabilities, and the like, as well as education for doctors (in the form of special courses), industrialists, and the general public. "Rehabilitation is not merely physical treatment but a regeneration of the spirit."

¹ *The Rehabilitation and Resettlement of Disabled Persons*. London: British Medical Association. Free to members of the B.M.A. Price 1s. 6d. (inclusive of postage) to others.