The question of the classification of leprosy quite justifiably preoccupies a great many leprologists. Leprosy control is extending year by year throughout the world, and the number of qualified specialists—already relatively low—is becoming increasingly inadequate. For this reason, effective leprosy control in most regions in which the disease is endemic is possible only through the properly organized cooperation of the whole medical profession. The establishment of a leprosy classification has, therefore, become an urgent problem to which a solution must be found without delay.

The classifications used up to the present are all easily understood by leprologists, but their diversity generally makes classification of cases difficult and often impossible for the majority of nonspecialized physicians. These physicians now insistently demand the adoption of a uniform classification which will be simple and universally acceptable, and based principally on the clinical signs of the disease.

The use of a classification based on histopathological examinations cannot be generalized in the underdeveloped countries. Furthermore, the interpretation of histological findings, even by competent laboratories, is often far from uniform. On the other hand, the correct classification of cases is almost always possible on the basis of clinical symptoms with the aid of the bacteriological examination.

1 This article was prepared as a working document for the WHO Expert Committee on Leprosy which met in Brazil in November 1952.
We have no intention of presenting a personal classification. We have merely endeavored to bring together the most useful data provided by the two best-thought-out classifications, i.e., those proposed by the Cairo and Havana congresses.

We have therefore divided leprosy into two types: benign leprosy and malign leprosy, the former including the tuberculoid and indeterminate forms of the disease. As will be seen from the scheme given hereunder, the cutaneous lesions of the tuberculoid and indeterminate forms have so many elements in common that we feel justified in grouping them together and indicating them as benign, in contrast to the malign lepromatous forms. In our experience, this division of leprosy into two types has great advantages from the didactic point of view. It also enables an inexperienced physician to classify his patients correctly in a simple and rapid manner.

Certain authors assert that the indeterminate form cannot be classified as benign since some of the cases may develop into the malign form. This argument, however, does not seem to us to be valid, since the tuberculoid form may also develop into the malign form. On the other hand, some indeterminate cases are stable, remaining as such indefinitely, while others change to the tuberculoid form. Moreover, if the existence of a malign type of leprosy is admitted, all the other forms which cannot be classified as malign should, logically, be included in the benign type.

In this scheme of classification we have endeavored to use only terms which have the same roots in most modern languages. The meaning of the symbols used in the abbreviated nomenclature can thus be easily understood in English, Spanish, Portuguese, Dutch, Italian, German and French.

The generally accepted use of the term "macule" to define certain cutaneous lesions in leprosy is not satisfactory. The word "macule" in dermatology refers particularly to marks which are discolored as compared with the general color of the skin but are not elevated above the surface and show no change in texture, whereas from the beginning the prominent cutaneous deformations of leprosy, particularly those of tuberculoid leprosy, have been called "macules" by the great majority of leprologists. However, we consider that the use of this term, which has been adopted for lack of a more precise word by eminent dermatologists such as Jeanselme and Klingmüller, should be retained in leprosy terminology.
The following is the classification scheme proposed by us:

I. PRIMARY CLASSIFICATION

BENIGN LEPROSY

In general, the initial form of leprosy.
Characterized by cutaneous lesions called leprids (macules, papules, very rarely nodules);
or by neural acroteric lesions (degeneration of peripheral sensibility, polynoeritis, trophic disorders, paralysis, mutilations);
or by an association of cutaneous and neural lesions.

Cutaneous lesions usually clearly delimited. Marked tendency to peripheral extension, to coalescence, and to resolution from the center.
Often asymmetrical arrangement.

More or less pronounced disorders of the superficial sensibility always associated with the lesions.

Negligible lesions of the mucous membrane, ocular system proper, and internal organs in slight and mild cases. Such lesions are rare and little evident even in advanced cases.

Bacteriological examination of the nasal mucosa generally negative (91%). Bacilli usually rare and not in "globi."
Skin lesions bacteriologically negative in more than half of the cases (57%). Bacilli usually rare, except during an active stage or a state of "reaction." With few exceptions, no bacilli in globi.

MALIGNE LEPROSY

In general, secondary to the benign form.
Characterized by cutaneous lesions called lepromas (macules, papules, nodules, infiltrations);
which are nearly always associated with neural acroteric lesions, sometimes clinically little evident (degeneration of peripheral sensibility, polynoeritis, trophic disorders, paralysis, mutilations).

Cutaneous lesions not clearly delimited, particularly when smooth or only slightly infiltrated. No tendency to peripheral extension or to resolution from the center.
Often asymmetrical arrangement.

Modification of superficial sensibility inconstant and sometimes not even associated with the lesions.

Lesions of mucous membrane, of the ocular system, and of the internal organs in mild cases fairly rare and often only slight, increasing in incidence and gravity with advancement of the disease.

Bacteriological examination of the nasal mucosa very often positive (73%). Nearly always positive in advanced cases (97%). Bacilli usually numerous and partly in "globi."
Skin lesions always bacteriologically positive (100%). Bacilli usually very numerous, partly in globi.

* The percentages shown refer to the results of our examination of 1,290 untreated patients.
### PRIMARY CLASSIFICATION—Continued

<table>
<thead>
<tr>
<th>PRIMARY LEPROSY</th>
<th>MALIGN LEPROSY</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENIGN LEPROSY</td>
<td>Lepromin reaction frequently positive (80%). A negative reaction indicates, in untreated patients, that a malign development is to be feared.</td>
</tr>
<tr>
<td>MALIGN LEPROSY</td>
<td>Lepromin reaction always negative. In exceptional cases the reaction may become feebly positive following prolonged treatment.</td>
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### SECONDARY CLASSIFICATION

<table>
<thead>
<tr>
<th>SECONDARY LEPROSY</th>
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</tr>
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<tbody>
<tr>
<td>TUBERCULOID LEPROSY</td>
<td>CUTANEOUS LESIONS (c) erythematous (pink to purplish-red), raised (macules, papules, rarely nodules), frequently soft in consistency.</td>
<td>CUTANEOUS LESIONS (c) smooth and flat (macules; hypopigmented, weakly erythematous or hyperpigmented). The appearance of slight elevation of the edge of the lesion indicates probable change to tuberculoid or lepromatous leprosy.</td>
</tr>
<tr>
<td>INDETERMINATE LEPROSY</td>
<td>CUTANEOUS LESIONS (c) smooth and flat (macules; hypopigmented, weakly erythematous or hyperpigmented). The appearance of slight elevation of the edge of the lesion indicates probable change to tuberculoid or lepromatous leprosy.</td>
<td>CUTANEOUS LESIONS (c) erythematous (salmon pink, copper red, purplish red in rare cases; little tendency to hypopigmentation), more or less infiltrated, frequently very prominent (macules, papules, nodules, infiltrations), often very firm in consistency.</td>
</tr>
<tr>
<td>LEPROMATOUS LEPROSY</td>
<td>CUTANEOUS LESIONS (c) smooth and flat (macules; hypopigmented, weakly erythematous or hyperpigmented). The appearance of slight elevation of the edge of the lesion indicates probable change to tuberculoid or lepromatous leprosy.</td>
<td>Fairly frequently, very slight thickening of the superficial cutaneous nerves; or neural lesions (n), acroteric (pronounced thickening, frequently moniliform, of the nerve trunks, polynu- ritis). Tendency to abscess formation, caseation and sclerosis.</td>
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</table>

- Very frequent and usually very marked thickening of the superficial cutaneous nerves; or neural lesions (n), acroteric (pronounced thickening, frequently moniliform, of the nerve trunks, polynu- ritis). Tendency to abscess formation, caseation and sclerosis. |
- No thickening of the superficial cutaneous nerves; or neural lesions (n), acroteric (moderate and uniform thickening of the nerve trunks, polynu- ritis). No abscess formation. Sclerosis not pronounced. |
- Fairly frequently, very slight thickening of the superficial cutaneous nerves, particularly the cervical nerves which are palpable. |
- The pure acroteric neural form (n), without accompanying cutaneous changes, probably does not exist in initial lepromatous leprosy. It could not be diagnosed, however, except by histological examination.
II. SECONDARY CLASSIFICATION—Continued

**BENIGN LEPROSY**

- **TUBERCULOID LEPROSY** (T)
  - Differential clinical diagnosis often difficult. It may be based on the pronounced moniliform thickening of the nerve trunks and the intense reaction to lepromin.

- **INDETERMINATE LEPROSY** (I)
  - Differential clinical diagnosis often difficult. It may be based on the moderate and uniform thickening of the nerve trunks and the weak reaction to lepromin.

**MALIGN LEPROSY**

- **LEPROMATOUS LEPROSY** (L)
  - Since the pathogenic agent is spread by the bloodstream, nerve lesions are almost always associated with skin lesions. However, in recent cases, polyneuritic disturbances are often absent or very slight (moderate thickening of the nerve trunks; slight degree of sclerosis). In cases of long standing, the cutaneous lesions may disappear while the polyneuritic symptoms become more severe (very marked thickening, often fusiform, of the nerve trunks; pronounced tendency to sclerosis). Such residual polyneuritic leprosy may be clinically diagnosed by means of the stigmata left by cutaneous lesions and the negative result of the lepromin test.

Precise classification can be achieved only by histological examination;

or association of cutaneous and neural lesions (cn).
II. SECONDARY CLASSIFICATION—Continued

BENIGN LEPROSY

TUBERCULOID LEPROSY
(T)

Histological examination of the skin and nerve lesions show presence of tuberculoid granulomas (epithelioid cells, giant cells of the Langhans type).

THREE VARIETIES

(1) Minor Tuberculoid
(T')

Moderately raised cutaneous lesions (macules, papules) with an irregular surface which is micropapulate, often of sarcoïd type. Pronounced tendency to thickening of the superficial cutaneous nerves.

Bacteriological examination rarely positive (nasal mucosa 8%, cutaneous lesions 25%). Bacilli rare except in an active period of the disease. No globi.

Lepromin reaction very often positive (92%). Reaction generally very intense.

INDETERMINATE LEPROSY
(I)

Histological examination of the skin and nerve lesions show infiltrations of the mild chronic inflammation type (histio-lymphocytic cells).

THREE VARIETIES

(1) Indeterminate Anesthetic
(1a)

Rare cases show, at the outset of the disease, an area of cutaneous anesthesia without any apparent change in the skin and without neuritis. These cases may provisionally be classified as indeterminate anesthetic leprosy. The histopathology and, above all, the subsequent course will permit more precise classification.

Bacteriological examination only infrequently positive (nasal mucosa 3%, cutaneous lesions 34%). Bacilli generally rare and, except in some lepromatous cases, never in globi.

Lepromin reaction frequently positive (87%). Reaction generally very intense.

MALIGN LEPROSY

LEPREMATICous LEPROSY
(L)

Histological examination of the skin and nerve lesions show presence of granulomas consisting of histiocytes (macrophages filled with bacilli, or "lepra cells," Virchow's vacuolate cells containing globular clusters or lysed bacilli).

NO DEFINITE VARIETIES

DIFFUSE LEPROMATICous LEPROSY
(Ld)

In rare cases the cutaneous lesions are extensive and diffuse, without localization in macules, nodules, or infiltrations. These cases may be designated as diffuse lepromatous leprosy.

Bacteriological examination always positive (nasal mucosa 73%, cutaneous lesions 100%). Bacilli usually very numerous, especially in the skin lesions, and partly in globi.

Lepromin reaction always positive (97%). Reaction usually weak.
### THREE VARIETIES

1. **Minor Tuberculoid (T')**
   - No state of reaction proper.
   - Spontaneous regression possible (skin lesions flatten, become hypopigmented and then repigmented before disappearing).
   - The residual skin and nerve lesions typically show the "indeterminate" histology (round cell infiltration).
   - Relatively stable variety. Nevertheless, may develop into the malign type.

### NO DEFINITE VARIETIES

1. **Indeterminate Anesthetic (Ia)**
   - No reaction state.
   - Spontaneous regression possible (normal pigmentation, then disappearance of the skin lesions.

### NO DEFINITE VARIETIES

1. **Diffuse Lepromatous (Ld)**
   - Frequent reaction states, often grave (high fever, adynamic state, exacerbation of existing lesions and sudden formation of new ones, tendency to relapse).
   - (In diffuse lepromatous leprosy, the reaction state may lead to the appearance of necrotic erythema (Lucio).)
   - Tendency to progressive aggravation of the disease.

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- Tendency to progressive aggravation of the disease.
(2) Major Tuberculoid (T)

Very prominent cutaneous lesions (macules, papules, rarely nodules) with uniform surface. Pronounced tendency to thickening of the superficial cutaneous nerves.

Bacteriological examination fairly frequently positive (nasal mucosa 12%, skin lesions 59%). In the skin lesions, bacilli may be frequent during reaction states and in advanced cases. Presence of globi exceptional.

Lepromin reaction very often positive (84%), generally very intense.

(3) Borderline Tuberculoid (BT)

Evolutive stage of major tuberculoid, frequently following a reaction state.

Cutaneous lesions sometimes very prominent (macules, papules) and soft in consistency. Surface often smooth, shiny and dark red. Arrangement frequently asymmetrical. Slight tendency to thickening of the superficial cutaneous nerves.

Bacteriological examination always positive (nasal mucosa 38%, skin lesions 100%). Bacilli usually numerous. Rare globi, especially in the skin lesions.

Lepromin reaction generally negative (86%), or very feebly positive (14%).

Histological examination often necessary for differential diagnosis of this variety (presence of granulomas of both tuberculoid and lepromatous appearance, sometimes in the same lesion).
Chaussinand: Classification of Leprosy

(2) Major Tuberculoid

Fairly frequent appearance of reaction states (fever, sometimes high, exacerbation of existing lesions and sudden formation of new ones. Nodules which may appear are paucibacillary. Subsequently, tendency of the skin lesions to regression). Reactions with the formation of bullous lesions ("lazarine") are rare.

Spontaneous regression possible (process identical to that described under minor tuberculoid).

Relatively stable variety. Nevertheless, may develop into the "borderline" variety and the malign type (lepromin negative).

(3) Borderline Tuberculoid (BT)

No reaction state proper. Regression to the major tuberculoid variety possible. Unstable variety, frequently developing into the lepromatous type.

III. ABBREVIATED NOMENCLATURE

(1) Classification of the different forms of leprosy—

**MALIGN LEPROSY**

<table>
<thead>
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<th>Lepromatous Leprosy</th>
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<tbody>
<tr>
<td>minor (T) minor &quot;borderline&quot; (BT)</td>
<td>Cutaneous (c) macular (m) proliferating 3 &quot;lazarine&quot; (I)</td>
<td>Cutaneous (c) macular (m) proliferating 3 &quot;Lucio&quot; type (I)</td>
</tr>
<tr>
<td>major (T) major &quot;borderline&quot; (BT)</td>
<td>Neural (n) cutaneo-neural (cn)</td>
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</tr>
</tbody>
</table>

3 The definition "proliferating" (p) is suggested to designate cases of leprosy showing nodules or infiltrations, so as to avoid the double use of the letters "n" and "L".
State of the disease.—Slight case (1); moderate case (2); advanced case (3).4 (The numbers should be placed before the letters c or n.)

Degree of activity of the disease.—Florid (f); quiescent (q); residual (r). (The letters f, q, or r should be placed after T, I, or L.)

Lepros reaction.—Moderate reaction: underline once or put in italics. Marked reaction: underline twice or put in underlined italics.

Results of bacteriological examinations.—Use the signs + or −, firstly for the nasal mucosa and then for skin and possibly nerve lesions.


Slight indeterminate leprosy. Bacteriological examination negative.

More detailed classification: T−3cIn−+. Advanced major cutaneous-neural tuberculoid leprosy, in a state of moderate reaction. Numerous skin lesions, slight neural lesions (peripheral anesthesia of limited extent without trophic disturbances, or slight atrophy or parasthesia). Bacteriological examination negative for the nasal mucous, positive for the skin lesions.

Complete classification: L(fx(pm))n−+. Advanced florid, cutaneous-neural lepromatous leprosy in a pronounced state of reaction. Presence of numerous extensive and very marked skin lesions (nodules, infiltrations, and macules) and very considerable neural lesions (extensive peripheral anesthesia, trophic and motor disturbances: paralysis, atrophy, contractures, trophic ulcers and mutilation). Bacteriological examination positive for both the nasal mucous and the skin lesions.

L2In−+. Moderate residual neural lepromatous leprosy. No visible skin lesions. Moderate neural lesions: peripheral anesthesia, very extensive on one extremity, less extensive on two or more extremities and moderate trophic disturbances (atrophy, possibly paralysis with commencement of contractures). Bacteriological examination negative.


The stage to the disease from the neural point of view is indicated schematically in the “examples,” later.