

ARTICLES

MALARIA CONTROL SYMBOLS

FRED W. KNIPE

FOREWORD

Malaria, long recognized as one of the outstanding diseases of the world, has been given additional prominence during recent years. This is particularly true since the introduction of new, highly lethal insecticides, the efficient use of which begins to convey hope that the disease may ultimately yield to complete eradication. Many medical authorities and others acquainted with the control of malaria are of the opinion that world-wide measures will be rapidly intensified toward wiping out this disease, since the insecticides now available for use against mosquitoes are so strikingly potent. In widely extended work of this kind some universal system of pictorial representation of the various ramifications of malaria control should be of great value. No known concentrated effort has ever been made to work out such a system, but a comprehensive symbolization introduced on an international scale might play an important part in promoting better understanding among those engaged in the task.

Preventive measures only are considered; factors dealing with curative medicine have not been included. Malaria control embraces many fields—medicine, entomology, engineering and agriculture. Symbols of more or less international application are in use in these fields, with the possible exception of medicine, which is perhaps more difficult to portray in symbolic form. A serious effort has therefore been made in the preparation of this present work to incorporate in it, under distinctive headings, the standard symbols already in common international use in the particular field in question. Wherever overlapping has seemed likely the simple form in most common use has been chosen, and wher-

ever new symbols had to be devised, as was inevitable, they too have been kept simple. The list, though long, quite naturally is not complete, nor could it be; the objective has been to present it in as comprehensive a form as possible, allowing for modifications or additions as the occasion may indicate. The symbols will enable the professional or lay field worker to add intelligently to his map or notes as the work proceeds, without having to make descriptive reports. He may insert information which any co-worker, even one unfamiliar with the language, can easily interpret, and he may present particular malaria problems so that they can be readily understood not only by another investigator in the same area but by those in other areas where totally different problems are involved. Individual workers will need to use and remember only certain characters for the immediate work in hand in a definite region.

The amount of symbolic material pertinent to a certain area which can be incorporated will naturally depend upon the size of the map used. A study of the symbols will reveal many possible combinations. It would be quite impractical, in fact almost impossible, to symbolize all known genera and species of mosquitoes, but in some instances inclusion of such data may be indicated and inserted as illustrated, with a modifying accompanying note. To indicate many genera or species found in varying instars, a multiple number of instar indicators must be used, but this would occur rarely and probably only in descriptive literature or on large-scale maps. Impounded waters have been consolidated under nine headings with the full realization that overlapping and even duplication seem to occur. For instance,

pools would normally be included under this heading but have been given a separate heading to indicate small bodies of impounded water of an almost infinite variety.

The author's purpose in trying to simplify the malaria control problem by such pictorial presentation will have been fulfilled if those interested can find in it a common basis of expression in a common purpose.

The author desires to express his sincere appreciation to Dr. Paul F. Russell who called attention to the need for such legends several years ago while co-operative work was being carried out in India. Sincere thanks are also due to Mr. George F. Crutchfield for his untiring efforts in securing authentic data on standardized symbols, and also to Mr. Harold Haskell for his share in assembling and drafting the pictorial material presented.

WATERS OF SIGNIFICANCE IN MALARIA CONTROL (pp. 177-180)

Water of interest to malariologists is found under a great variety of conditions, but for the purposes of symbolization an effort has been made here to consolidate these variations under nine headings, namely: impounded water; pools (small bodies of impounded water of such infinite variety as to warrant separate consideration); three types of water supply—reservoirs, wells and springs; borrow pits; irrigation; drainage; and rivers.

IMPOUNDED WATER (p. 177)

Under the heading "Impounded Water" both waters which are naturally impounded and those artificially impounded are included. Naturally impounded types include lakes, swamps, marshes, "tanks" as the term is used in India, and other similar waters. These bodies of water are represented by an uneven symbol resembling a circle, and must be differentiated from the precise circle which designates the adult mosquito. Where the water is open, as in the case of a lake, the symbol is unmodified. If a fresh marsh is to be

illustrated, the symbol for it is superimposed upon that used for the open body of water. A body of water, open in the center and with a fresh marsh marginal edge, is shown by placing the fresh marsh symbol around the open water symbol.

Artificially impounded water may be illustrated by an appropriate superimposition on the natural lake symbol, such as "swamps from excess irrigation water." This is not an uncommon type of swamp where excessive irrigation is found. Where it exists it is usually a malaria hazard, and therefore has been given an individual symbol. In this way symbols may be developed which may illustrate a wide variation of water types.

INSECTICIDE DISTRIBUTORS (p. 180)

The hand pump which may be used

- 1) for production of an aerosol,
- 2) for larviciding,
- 3) for residual spraying,

is illustrated as an aerosol pump. To illustrate a larviciding pump, the right half (only) of the reservoir may be shaded. To illustrate a residual spray pump, the left half (only) may be shaded.

The shoulder pump may be used for the same purposes as the hand pump. To illustrate specific use, the area to the left or to the right of the vertical handle may be shaded, as for the hand pump.

The duster may be illustrated as a small hand bellows. When a power duster illustration is required, this may be symbolized as shown.

The aerosol distributor is symbolized by the general similarity in appearance to the high pressure aerosol bomb. In the illustration, the hand type appears without shading and the power types appear with shading. When shaded on the left of the "dome," a powered combination of either aerosol or residual spray is designated. If on the right, a powered combination aerosol larvicider is indicated. When shaded at the bottom, other power combinations may be symbolized.

In order to clarify the type of equipment actually in use with the aerosol (or

duster or larvicide) the grounded power unit is symbolized by a single stroke across the vertical aerosol "discharge" tube. Two strokes similarly placed represent a fixed wing airplane. A ">" stroke represents a helicopter.

There are instances where certain types of equipment may serve a combined purpose (duster, larvicide and aerosol). The combined unit is illustrated. The purpose it may serve may be represented by appropriate shading.

Insecticidal (smoke) canisters may be illustrated by adding a "flame" to the top of the hand aerosol.

The type of insecticide (DDT, BHC, etc.) may be designated within the body of the symbolic illustration.

DRAINAGE (p. 186)

Drains are symbolized by a number of "U's" placed to illustrate the ditch line and having a horizontal line drawn

through the middle to connect them into a series. Open ditches carry no further symbol. Lined ditches are represented by placing the lining material symbol above the horizontal line, and closed ditches by placing this symbol below the line.

Sometimes it is desirable to indicate certain specific interception drains, which may be either open or closed. This may be done by blocking out every other "U" either above or below the horizontal line, inserting in unblocked "U's" the type of material used.

Vertical drainage may be designated by closing the loop on the "U," thus making the symbol more or less egg-shaped, and crossed by a single line such as is used for the normal drainage symbol.

A field worker may wish to communicate to his headquarters office that a ditch should be excavated by a certain method. Symbols which will permit him to do this are provided on page 186.

EDITOR'S NOTE:

The figures which follow are arranged so that they fall into a logical order whenever possible. Thus, symbols for mosquito hosts and for the mosquitoes themselves are given first, followed by symbols for shelters. Next come possible combinations of the first three categories, together with examples of how the treatments applied may also be indicated. In general, the simpler symbols precede the more complex which, in turn, are often combinations of several preceding symbols.

Occasionally, one category or subject is carried over from one page to another,

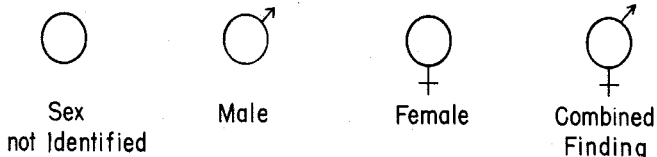
and the explanatory text which applies may be on the first page of the series, or on the last page preceding. An example of this continuity of text and figures occurs on pages 181 through 184 where water supplies are discussed, and symbols for reservoirs, wells and springs are presented. A better understanding of the entire series of symbols may therefore be gained if they are "read through" from page to page like standard written text.

This paper was submitted through the Office of Publications of the Rockefeller Foundation. Publication costs were paid by the Rockefeller Foundation.

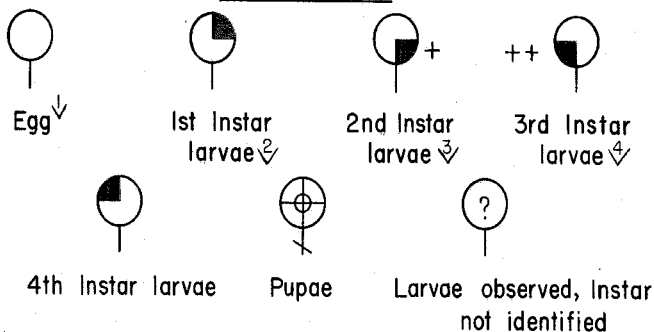
Principal Mosquito Hosts



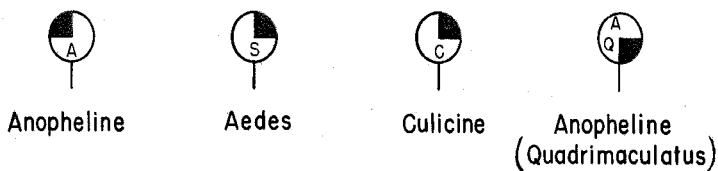
THE MOSQUITO
Adult Mosquitoes



Aquatic Forms



Genus and Species Identification ---- Any Instar



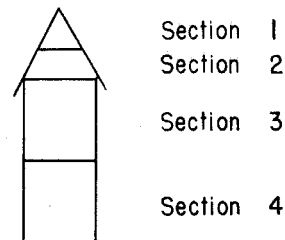
¹ Outer margin of circle may be shaded to indicate individual egg clusters or types of floats.

² A shaded quadrant indicates a small number of larvae.

³ + beside a shaded quadrant indicates that larvae are found in moderate numbers.

⁴ ++ beside a shaded quadrant indicates that larvae are found in large numbers.

SHELTERS



A symbol in Section 1 indicates permanency of occupation.

A symbol in Section 2 indicates construction-type and type of station.

A symbol in Section 3 indicates mosquito catches.

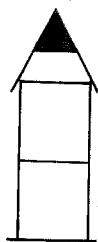
A symbol in Section 4 indicates type of occupant

SHELTERS

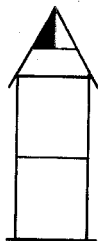
Man, Animals, or Both

A shelter occupied by man, animals, or both man and animals is symbolized by a two-story house with an attic, covered by a double pitched roof. The attic is divided into a top and a bottom section. The four sections of the symbol are numbered as shown above.

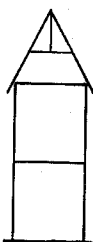
Shelter Occupancy
(man or animals)



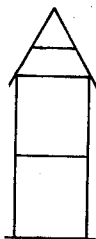
Permanent



Temporary



Occasional



Unoccupied

Shelter
Construction



1. Modern

- a. Brick-kiln Burned (B-K)
- b. Stone (S-1)
- c. Concrete (C)
- d. Frame (F-1)
- e. Adobe (A-1)

2. Semi-modern

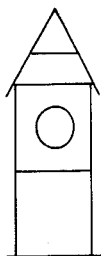
- a. Brick-sun Dried (B-S)
- b. Frame (F-2)
- c. Adobe (A-2)

3. Primitive

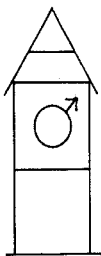
- a. Mud (M)
- b. Straw Thatch (S-3)
- c. Palm Thatch (P)
- d. Bamboo (B)
- e. Adobe (A-3)
- f. Poles Chinked
with Mud (P-M)
- g. Other (O)

MOSQUITO CATCHES

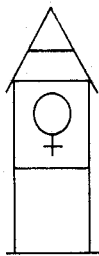
in Shelters Occupied by Man and Animals ↓



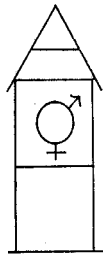
Unidentified



Male

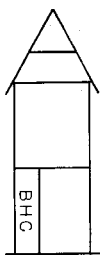


Female

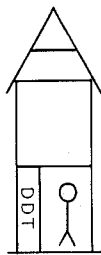


Combined

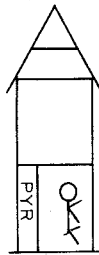
Occupant of Shelter



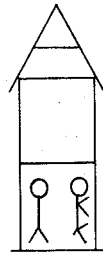
Unidentified



Human



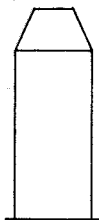
Animal



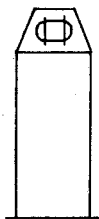
Combined

1. Dichloro-diphenyl-trichloro-ethane = DDT
2. Chlordane = CHLOR
3. Pyrethrum = PYR
4. Gammexane = BHC
5. Toxaphene = TOX

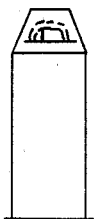
¹If space permits all data suggested under "Adult Mosquitoes" may be included. A minus sign may be used to designate "positively unidentified." A description of the specific animal occupant may be written in. Genera and species identification same as for larva instars. Aerosol or residual treatment, insecticide used, date of application as indicated.



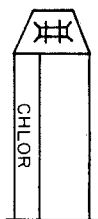
Symbol for Animal Capture Station



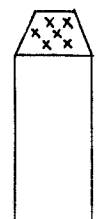
Culvert



Cave



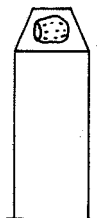
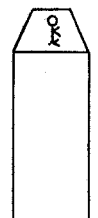
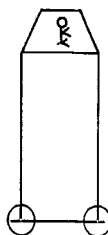
Bridge



Jungle



Tree Hole

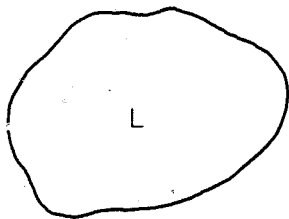
A. R. P.
artificial resting
placeAnimal Bait Trap
StationaryAnimal Bait Trap
Movable

MOSQUITO SHELTERS

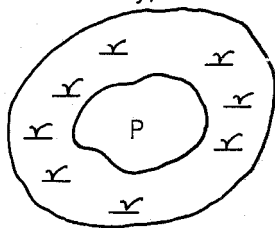
For a shelter occupied by mosquitoes only, a slightly modified form of the man-animal shelter is used. Such a shelter is known as an adult capture station, and may not be a place in which either man or animals ever find protection. It may be a culvert, a bridge, a tree hole, a cave, an artificial resting place, or it may take some other form.

Impounded Water

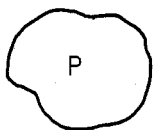
Natural Lake or
Open Water



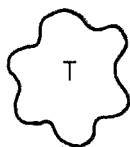
Pond with Marsh
Boundary (add
type of vegetation
where necessary)



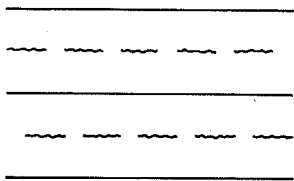
Pond



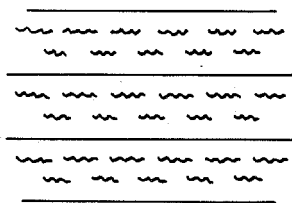
Tank (India)



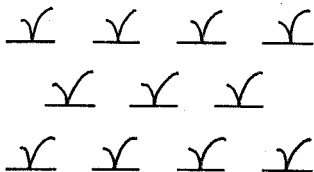
Natural Swamp



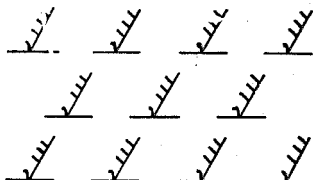
Artificial Swamp
(from excess irrigation)



Fresh Marsh



Salt Marsh



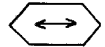
Pool Symbol



Rain Water



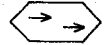
Tidal



Irrigation



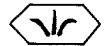
Seepage



Crab Hole



Sod



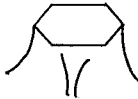
Animal Hoofprints



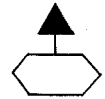
Pot Hole



Tree Hole



Flower Pot

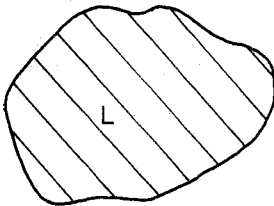


Control Measures

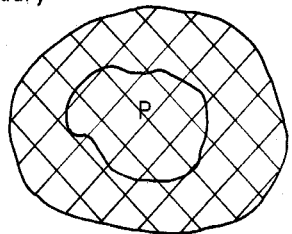
DRAINED

FILLED

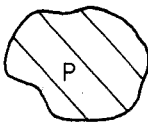
Lake



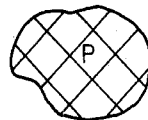
Pond with Marsh Boundary



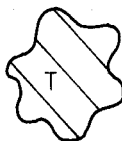
Pond



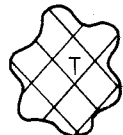
Pond



Tank



Tank

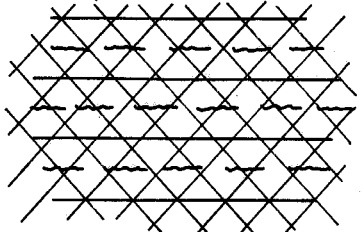
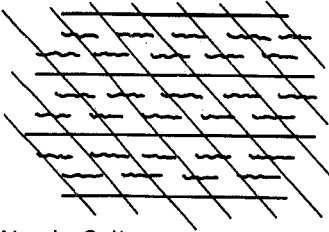


DRAINED

FILLED

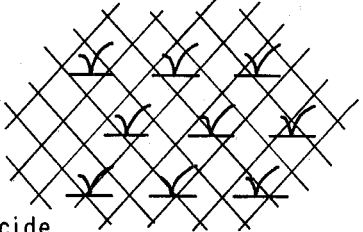
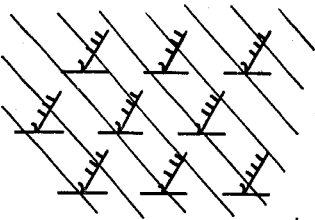
Swamp

Swamp



Marsh Salt

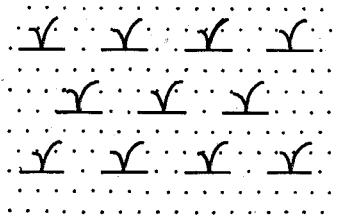
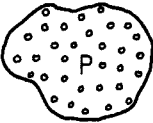
Marsh Fresh



Larvicide

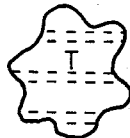
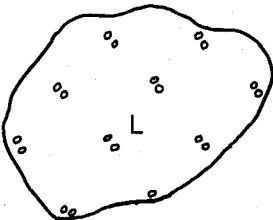
Oil on Pond

Paris Green or other insecticides on Fresh Marsh



DDT in Oil on Lake

Other Measures on Tank

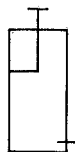


Insecticide Distributors

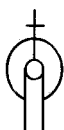


Hand Pump (Aerosol)

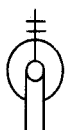
Shoulder Pump
(Residual)



Hand Duster
(Bellows type)



Power Duster
(Grounded)



Power Duster
(Fixed wing
airplane)



Power Duster
(Helicopter)



(Power- Grounded)



(Fixed wing airplane)



(Helicopter)

Combined Duster and Larvicide



Hand Aerosol
(Bomb type)



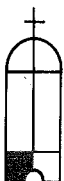
Power Aerosol-
Residual
(Grounded)



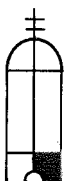
Power Aerosol-
Larvicide
(Fixed wing
airplane)



Power Aerosol-
Residual-
Larvicide.
(Helicopter)



Power Residual
(Grounded)



Power Larvicide
(Fixed wing
airplane)



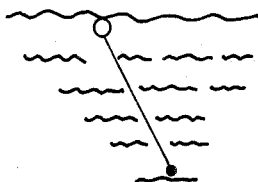
Power Residual-
Larvicide
(Helicopter)



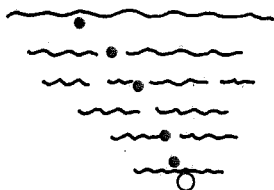
Insecticidal
Canister
(Smoke)

Miscellaneous Control Measures

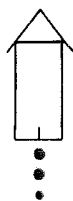
1. Oil Ball a. Floating



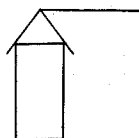
b. Submerged



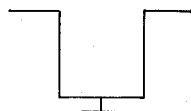
2. Drip Can



3. Light Trap



4. Automatic Larvicide Distributor



WATER SUPPLIES

Water supplies may be summarized under three headings—reservoirs, wells, and springs. The reservoir, which includes any body of water artificially stored, is symbolized by a hollow square. The type of reservoir may be made specific by placing within the square the numeral 1, 2, 3, or 4, which are defined below.

1. Water supply
2. Fish-stocked reservoirs
3. Irrigation reservoirs
4. Decorative reservoirs

Designation "1" may be further broken down by the use of symbols showing whether the water supply is for the use of humans or animals or for commercial purposes. The latter use is indicated by a capital letter T laid sideways.

When a reservoir serves two or more purposes this may be indicated by placing the proper symbols and numerals in the square. For example, in the case of a reservoir which is an animal water supply, an irrigation project, and a power development, the animal symbol would be placed in the upper half of the square, a line would be drawn under this symbol and the figures 1 and 3 (indicating water supply and irrigation reservoir, respectively) would be placed below, separated by a comma; then, a perpendicular line would be placed across the division line of the square to indicate the commercial use.

N.B. Example of possible symbol combinations:

An animal water supply which also furnishes water both for power development and for irrigation purposes would be symbolized by a square, an animal symbol in the upper half with a line drawn below; the numeral "1", a comma, and the numeral "3" in the lower half; and a perpendicular line across the end of the square division line.

Reservoir Symbol

I. Water Supply -



Human



Animal



Commercial



3. Irrigation



4. Decorative



2. Fish-Stocked

Fish
Unidentified

Gambusia



Panchas



Lebistes



WELLS

A well is symbolized by a hollow circle within a circle. The double circle eliminates possible confusion with the symbol for the adult mosquito. It allows for an indication of the type of well lining and whether or not the well water is polluted or pure. A well may be used as a water supply, an irrigation well, a fish well, a decoration, or for commercial purposes (e.g. to supply a steam boiler). Its functions may be designated by the symbols used in the case of reservoirs. Its mineral content is indicated by the appropriate chemical symbol.

Note: "Animal" as represented here should be the same symbol used in other figures, as on pages 172 and 175.

Well Symbol



Pure
(Nonflowing
unlined)



Polluted
(Flowing
unlined)



Pure
(Nonflowing
human & irrigation
unlined)



Pure
(Nonflowing
brick-lined)



All Mineral
Contents Indi-
cated by Chemical
Symbol



Pure
(Flowing
stone-lined)



Polluted
(Nonflowing
stone-lined)



Pure
(Nonflowing
concrete or vitreous-
lined)



Polluted
(Flowing
concrete or
vitreous-lined)



Spring Symbol



Pure
(Unlined
nonflowing)



Polluted
(Unlined
flowing)



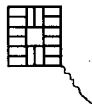
Sulphur
(Earth-lined
nonflowing)



Polluted
Sulphur
(Earth-lined flowing)



Pure
(Brick-lined
flowing)



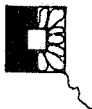
Polluted
(Brick-lined
nonflowing)



Pure
(Stone-lined
nonflowing)



Polluted
(Stone-lined
flowing)



Pure
(Concrete or
vitreous-lined
flowing)

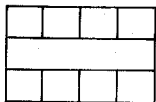


All Mineral
Contents Indicated
by Chemical
Symbol

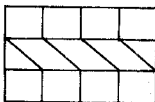


Borrow Pit
Symbols

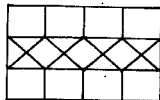
Open



Drained



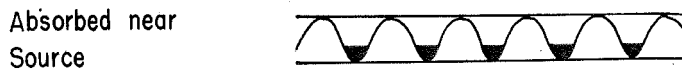
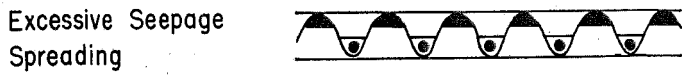
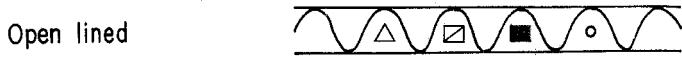
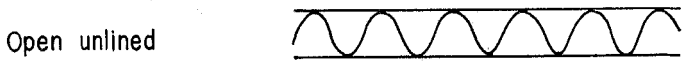
Filled




IRRIGATION

Irrigation canals are represented by a series of waves or cycles enclosed between two parallel lines. Most irrigation ditches are unlined, but where linings exist they may be indicated by the symbols reserved for such detail. A closed irrigation ditch is shown by a shading of a portion between troughs of the waves. Excessive seepage from irrigation canals which may be spreading, i.e., not absorbed near the canal proper, is indicated by a shaded portion of the crest of the wave. In cases where absorption takes place near the source, immediately after escaping from the canal, is indicated by shading the trough of the wave.

Irrigation Canals




Concrete 

Concrete Tile 

Brick 

Stone 

Clay 

Clay Tile 

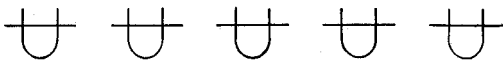
Rubble 

Bamboo 

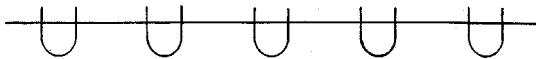
Drainage Canals

(Materials indicated by Symbols)

Proposed
Open



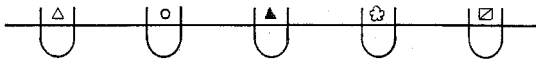
Completed
Open



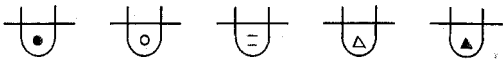
Proposed
Lined



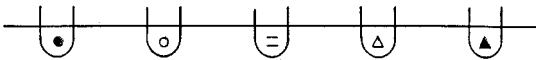
Completed
Lined



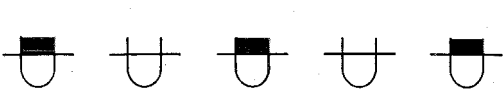
Proposed
Closed



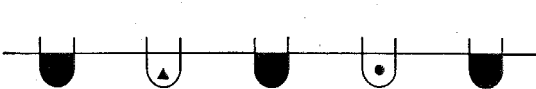
Completed
Closed



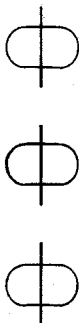
Proposed
Interception
Open



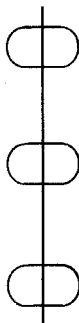
Completed
Interception
Closed



Proposed
Vertical

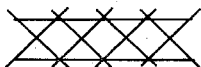


Completed
Vertical



Drainage Canals
(Method of Construction)

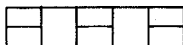
Dynamite
to be used



Dynamite
used



Hand Labor to be used



Hand Labor
used



Machine
to be used



Machine used



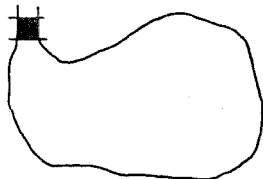
Water Movement

Structures in Irrigation System

a. Anicut or Large Diversion Weir



d. Impounded Lake



b. Barrage



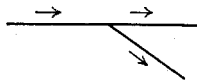
e. Drop or Fall



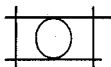
c. Dam



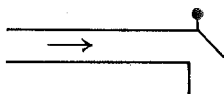
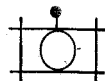
f. Diversion or Wye



g. Sluice Uncontrolled



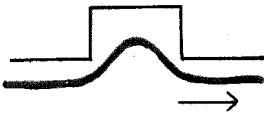
h. Sluice Controlled



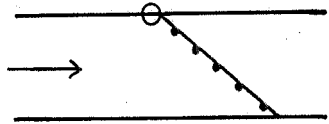
i. Sluice Manually Controlled Gate (Direction)

Structures in Irrigation System (Continued)

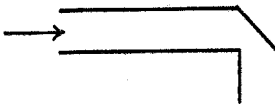
j. Automatic Siphon √



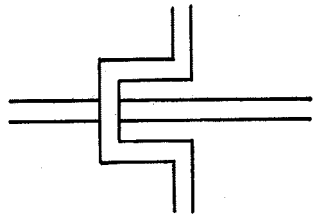
n. Oil Boom



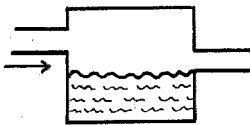
k. Automatic Gate



o. Aqueduct



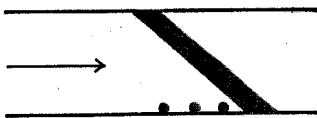
l. Desilting or Sand Trap



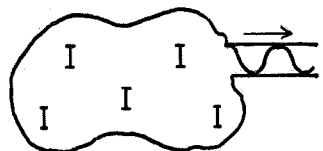
p. Irrigation Canal



m. Flotage Trap or Boom



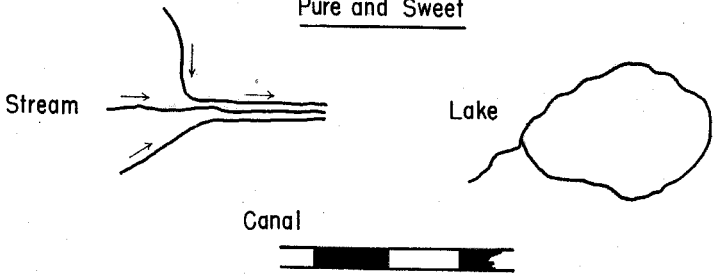
q. Tank or Pond Irrigation



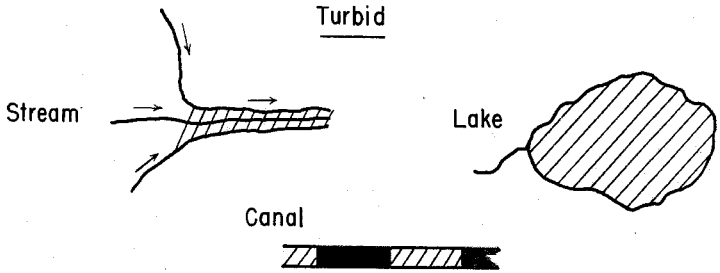
√ Almost exclusively a malaria control feature in water movement.

WATER CHARACTERISTICS

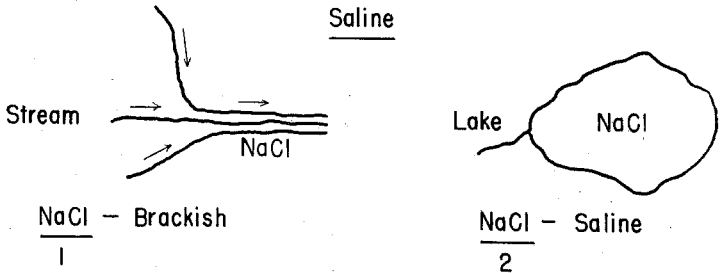
Pure and Sweet



Turbid



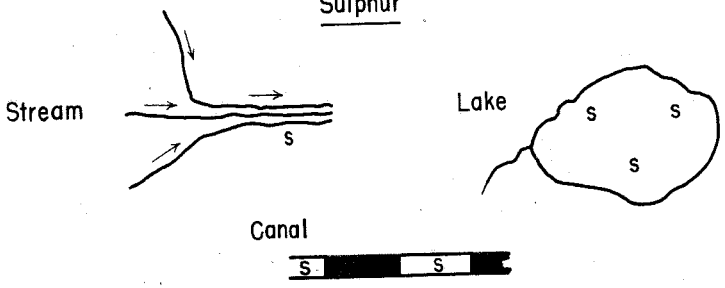
Saline



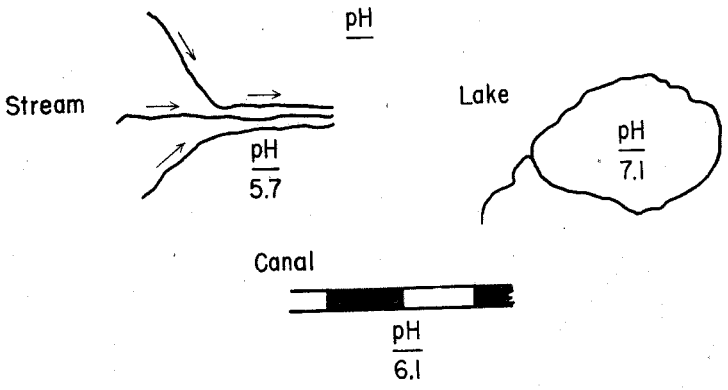
NaCl - Dense

3

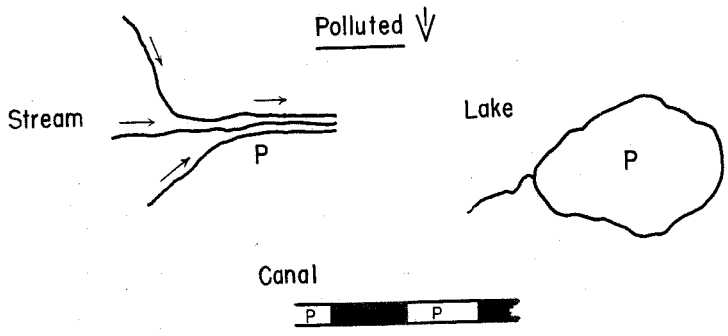
Sulphur



pH

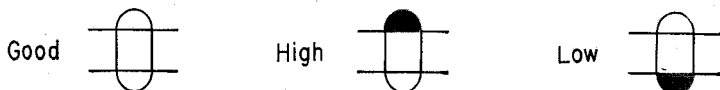


Polluted √

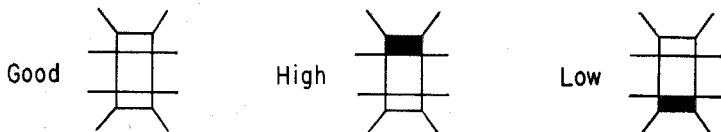


¹ Portion of "P" loop is darkened to indicate pollution; this conforms with the indication for polluted wells or reservoirs. In other words, part of the symbol blacked out, where water is present, indicates pollution. If turbid water is also polluted the "P" should be added.

Culverts



Bridges



BRIDGES AND CULVERTS

The malarialogist classifies bridges and culverts in three categories: those that are good, those placed with the invert too high above the grade line, and those placed with the invert too far below this line. Symbols for these types are given above. In case it is necessary to give additional information, such as material of construction, the appropriate symbol may be placed immediately outside the bridge symbol.

A culvert is essentially a type of bridge but a standard form is generally used for each structure. The malarialogist recognized three general types of bridges or culverts, namely, those structures placed on the grade line or with the invert too high above or too low below the grade line. Additional information may be added as needed, as e.g. placing the appropriate symbol immediately outside the bridge symbol to indicate construction material, and in the blank space within the structure to indicate adult mosquitoes or larvae found under the bridge.

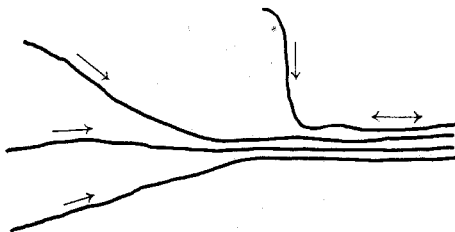
STREAMS

A single line is used to represent a stream of small flow; two lines indicate a creek or stream of considerable size; three lines represent a small river and four lines a major river.

WATER MOVEMENT

The arrow is used as the standard symbol for stream movement and the double arrow for tidal movement. Surface runoff is indicated by a flight of arrows. Symbols for a number of other water movements of importance in malaria control are shown on page 193.

Rivers and Streams



Number of lines indicates stream size

- 1 line = Stream
- 2 lines = Creek
- 3 lines = Small river
- 4 lines = Large river

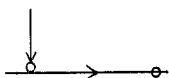
Flow →

Tidal ↔

Man-made Features

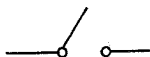


Elevated Tank



Sewer or Drain Pipe

Septic Tank
or Cesspool



Gate



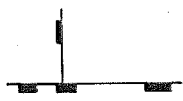
Windmill



Hay
or Grain Stack



Telephone Line



Pipe Line, Water



Hydrant

x $\frac{BM}{95.77}$

Bench Mark

Pumps



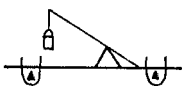
Pumping Plant



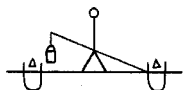
Pumping Plant
(Manually Operated)



Pumping Plant
(Automatically Operated)



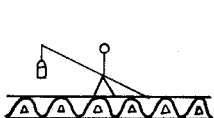
Pumping Plant
Drainage



Pumping Plant Drainage
(Manually Operated)



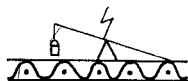
Pumping Plant Drainage
(Automatically Operated)



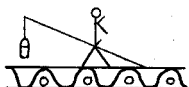
Pumping Plant Irrigation
(Manually Operated)



Pumping Plant Irrigation



Pumping Plant Irrigation
(Automatically Operated)



Pumping Plant Irrigation
(Animal Operated)

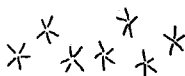


Drainage Pump

Vegetative Growth

Types of Trees

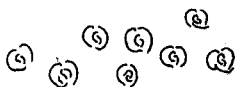
Pinales
(All Coniferae)



Deciduous (Oak)



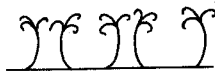
Deciduous
(Round Leaf)



Rubber



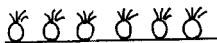
Cocoanut Palm



Palm (Other)



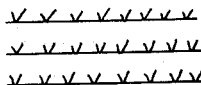
Pineapple



Banana

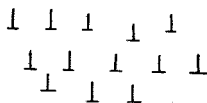


Vegetable Garden

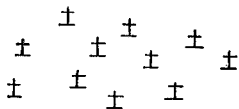




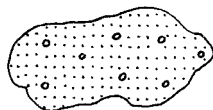
Brush



Mixed Vertical Vegetation



Mixed Horizontal Vegetation



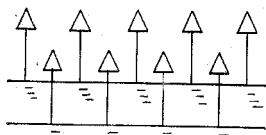
Gravel or Sand Spot



Alkali Spot



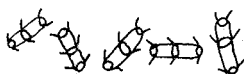
Dense Jungle



Casuarina Plantation



Palmetto



Bamboo



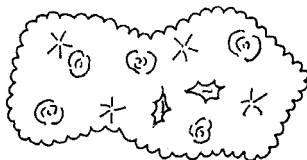
Cactus



Mangrove



Water Hyacinth



Forest, Mixed

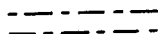
Man-Made Features

Roads

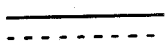
Paved



Cart
Tracks



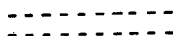
Unpaved



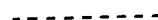
Pack
Trails



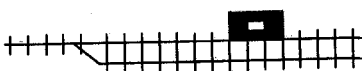
Unimproved



Paths



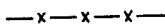
Mile or Kilometer
Stones



Railroads (showing stations)

Fences

Barbed Wire



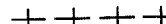
Picket



Barbed and
Woven Wire



Woven
Wire



Board



Temporary



Hedge



Rail



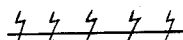
Board and
Wire



Stone



Electric



∇ Probably the most recent type of fence. No standard symbol could be found to represent it.

Boundaries

Protected Zone P P

Control Zone

A

C

B

D

Distances of Control Zones thus:- Control Zone A $\frac{1}{4}$ mile
Control Zone D 1 kilometer

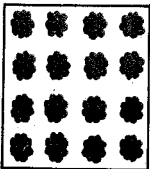
State or Province Boundary

County Line

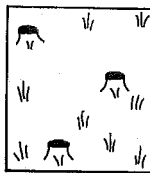
Civil Township or District Precinct

City, Village or Borough

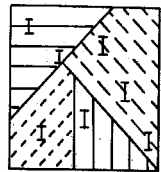
Agricultural Features



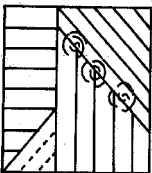
Orchard or Grove



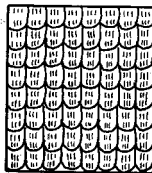
Clearing



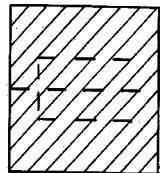
Irrigated Fields



Cultivated Land



Rice Fields



Tiled Fields

Or pasture. Stump symbol indicates new clearing.