TECHNICAL REPORT
66-20-ES

CLOTHING ALMANAC FOR SOUTHEAST ASIA

by
Robert L. Anstey, Ph.D.

January 1966

UNITED STATES ARMY
NATICK LABORATORIES
Natick, Massachusetts 01760

Earth Sciences Division
ES-22

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U.S. Army Materiel Command
U.S. ARMY NATICK LABORATORIES
Natick, Massachusetts

FOREWORD

On 2 August 1965 the Commanding General and Scientific Director of these Laboratories were briefed by Brigadier General T. H. Scott, Jr., Director of Supply, USASMC, on the subject of materiel readiness for Viet Nam. Included in the items identified for updating was the Clothing Almanac for Southeast Asia.

Appreciation is extended to personnel of the Clothing and Organic Materials Division, particularly Dr. Jan H. Vanderbie, Messrs John Slauta and Mario DiPaolo, who assisted in the preparation of the report and suggested changes in the text and nomenclature. Clothing item nomenclature used in this report is based on the data available as of 30 November 1965, the date of the preparation of this report.

This report revises and updates the information contained in Clothing Almanac No. 18 dated December, 1951, copies of which should be destroyed.

LESTER W. TRUEBLOOD
Chief
Earth Sciences Division

Approved:

DALE H. SIELING, Ph.D
Scientific Director

W. M. MANTZ
Colonel, QMC
Commanding

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ABSTRACT

This Clothing Almanac supplements TA 50-902, mobilization, dated 3 April 1963. In this report monthly military clothing requirements are given for Southeast Asia, including the countries of Burma, Laos, Cambodia, Malaysia, Thailand, and Viet Nam. This region covers portions of Clothing Allowance Zones I and II, which are further divided into mountainous and non-mountainous clothing requirement areas. In general, the environmental conditions of the lowland areas in the southern half of this region require the use of Zone I clothing throughout the year. Zone II clothing is required in lowlands in the northern half of this region. Mountainous areas generally require the use of items listed for the next colder zone, or any additional item required for troop protection. Clothing items are grouped alphabetically in tables for each area. A map is provided at the back of the report to indicate the extent of each area in Southeast Asia. The almanac includes a summary of physical features of the region, high elevations, climate, biotic conditions and the relation of these features to the issue of special clothing items.

CLOTHING ALMANAC FOR SOUTHEAST ASIA

1. Introduction

a. Purpose

Clothing Almanacs show monthly requirements for items of military clothing to be used in a particular part of the world. They are intended to aid logistic planners by indicating not only the most suitable military clothing for each month, but also the climatic and geographic conditions which make such clothing suitable. The tables can be used in planning clothing issue and seasonal clothing renovation, in scheduling warehouse operations to make maximum use of critical space, in estimating the probable amounts of use and wear of various items and consequent requirements for their replacement. The Almanacs furnish guidance to theater, Army, and other commanders responsible for authorizing the issue of discretionary items; they also provide information for commanders of posts, camps, stations, and divisions or equivalent organizations.

b. Basis of Almanacs

Clothing Almanacs supplement T/A 50-902* specifies the total yearly clothing allowances for each of seven world-wide zones (see Fig. 1). Each Clothing Allowance Zone is based on the average temperatures of the coldest and warmest months, as shown in Table I. For each zone, T/A 50-902 lists the items that are required or mandatory. It also lists for each zone the items that are discretionary. (Discretionary items are not required by all personnel within the respective zones, but they are essential to the operating efficiency of certain personnel because of duty assignments which may involve greater exposure to environmental conditions.) Within the framework of T/A 50-902, Clothing Almanacs show monthly clothing requirements in specific parts of the world, indicating essential items in both mountainous and non-mountainous areas.

Clothing Almanacs are based on a detailed study of local environmental conditions. Each Almanac specifies the clothing most likely to be needed by troops for adequate protection against these conditions, during round-the-clock operations. Of primary concern in preparing an Almanac is the amount and kind of clothing needed by a soldier in the field while his activity is relatively light. During strenuous activity, troops need

*T/A 50-902, Mobilization, 3 April 1963.

TABLE I: CLOTHING ALLOWANCE ZONES OF T/A 50-902
(with Temperature Basis, Part 6 para 1)

Zone		Coldest Month Monthly Mean (°F)	Warmest Month Monthly Mean (°F)
I	Warm or hot all year	Above 68	Above 68
II	Warm or hot summers, mild winters	50 to 68	Above 68
III	Warm or hot summers, cool winters	32 to 50	Above 68
IV	Mild summers, cool winters	32 to 50	50 to 68
V	Warm or hot summers, cold or very cold winters	Below 32	Above 68
VI	Mild summers, cold winters	14 to 32	50 to 68
VII	Mild summers, very cold winters	Below 14	Below 68

less clothing; when completely at rest, they require more clothing to remain comfortable. Clothing Almanacs show the items that will give troops adequate protection for at least 90 percent of the time, and in an average year any particular item can be expected to be used at least 30 percent of the time during the months specified.

c. Description of Clothing Requirement Areas

Clothing Almanacs are issued for larger countries, sub continents, and other major parts of the world (e.g., Western Europe, Central Europe, Southwest Asia), which may include parts of two or more T/A 50-902 Clothing Allowance Zones (Zones I to VII as in Table I and Fig. 1). Each Clothing Almanac delimits a number of Clothing Requirement Areas, according to differences in monthly clothing requirements. Clothing Requirement Areas are of two types, non-mountainous and mountainous.

(1) Non-mountainous Clothing Requirement Areas are designated by Roman numerals of the world-wide Clothing Zones in which they occur (e.g., Southeast Asia II). Although Clothing Requirement Areas in different Clothing Almanacs may have identical designations, they do not necessarily have the same environmental conditions or monthly clothing requirements. For example, monthly clothing requirements in Southeast Asia II are not the same as those in Southwest Asia II.

(2) Mountainous areas are identified by an Arabic numeral to indicate that field conditions and, consequently, clothing requirements may change rapidly within a relatively short horizontal distance. In such places, clothing allowances which are adequate for adjacent lowlands may not provide sufficient protection for these diverse highlands; therefore, in these higher or more rugged areas, commanders may, at their discretion, authorize the clothing allowance of the nearest adjacent area, plus additional items authorized for Zones V and VII and special mountaineering equipment, as required. Moreover, areas adjacent to the boundary between zones, under special climatic conditions may require the issue of certain clothing and personal equipment items allowed in the colder or warmer zone. In these cases, commanders may authorize discretionary allowance (T/A 50-902, part 3, sec. II).

In general, individuals in mountainous areas experience lower temperatures as they move poleward at the same elevation. For example, troops stationed in an outpost 2000 feet above sea level at 25° north latitude would require Zone III clothing items, while troops operating at the same elevation at 15° north latitude would require Zone II clothing (Fig. 2). Also, east coast mountainous areas frequently have lower temperatures than those at the same elevation on the west coasts of Southeast Asia. Broken boundary lines are shown to allow for flexibility of issue where significant local variations in climate are not fully known or are difficult to indicate on maps of the scale used in this Almanac.

Clothing Requirement Areas in Southeast Asia are shown on the map in the back of the Almanac. Each area is numbered according to the system outlined above. For the Clothing Almanac of Southeast Asia there are 6 Clothing Requirement Areas: I, 1; II, 2; and III, 3.

For each Clothing Requirement Area there is a corresponding table in the Almanac. Since there are 6 Clothing Requirement Areas for Southeast Asia, there are 6 tables for this Almanac. Months are shown along the top, and the clothing items are listed on the left-hand side of the page. Need for an item is shown by a solid bar drawn horizontally opposite the item and in the proper month-column. The absence of such a bar means that the item is not needed in that month. Clothing items have been grouped and arranged alphabetically in the tables under the headings of Body Clothing, Footgear, Handgear, Headgear, Sleeping Equipment and other items. For some items, model numbers, shade numbers, etc., have been eliminated to conserve space. Both mandatory and discretionary items are included in the tables. Discretionary items are indicated by an asterisk (*).

No requirements are shown for specialized equipment which may be authorized by the Commanding General, theater of operations, or by the Department of the Army for individuals undergoing special training. Also excluded are items in the nature of equipment rather than clothing: insignia, toilet articles, knives, barracks bags, tents, etc.

d. New Items

All items listed in the clothing tables are authorized in T/A 50-902 for the respective zones (e.g., Southeast Asia I, II, and III). As improvements are made, new items are standardized, which automatically replace the older ones in the tables as well as in requisitions. Upon standardization of completely new items, which are not simply improvements but are so different as not to be comparable to older items, special instructions for their use will be furnished in an official publication.

2. Physical Regions of Southeast Asia

Southeast Asia covers an area slightly smaller than Mexico and Guatemala (Southeast Asia comprises 801,709 sq. mi., Mexico and Guatemala 803,874 sq. mi.), and is much narrower, extending across nearly 28 degrees of latitude from just north of 1° north to nearly 29° north latitude, a distance of 1,930 miles. The Tropic of Cancer (23°27'N) passes through the mountainous part of northern Burma (Fig. 3). It is largely tropical with marked seasonality. Clothing requirements in lowland areas do not change with the seasons; in the mountains not only are changes of clothing required for different times of the year, but additional clothing is needed, reflecting the slightly cooler conditions of the uplands.

a. Highlands

The highest peak in Southeast Asia is Hkakabo Razi (19,296 ft.) in the Mingin-Kumon Mountains of northern Burma. It is snow-covered throughout the year above 15,000 feet, but some snow fields are encountered as low as 12,000 feet. Several other peaks in Southeast Asia rise over 12,000 feet. In addition to Arctic clothing, operations at these high elevations require the use of special climbing equipment, including pitons, climbing rope, snap links, and ice creepers. About 5 percent of the area is more than 6000 feet in elevation, 25 percent between 3500 and 6000 feet, and 70 percent below 3500 feet. The lower slopes are covered by tropical rain forest, the middle altitudes by oak and pine, and the snow-free peaks largely by rhododendron. In the Tonkin Highland of northern Viet Nam one peak (Fan si Pan) reaches 10,309 feet, and another (Pou Loung) is 9,884 feet above sea level. Most of these mountains are heavily forested and have numerous steep-sided, narrow

valleys. The forests are of mixed hardwood species in dense stands on the upper slopes, but selective logging has removed the larger trees in the foothill areas. Mount Victoria (10,018 feet) is the highest point in the Arakan Yoma and Chin-Letha Mountains on the border of Pakistan. The highest peak in the Annamese Highland (Viet Nam-Laos) is Phou Bia (9,240 feet); other peaks in this region are in the 7000- to 8000-foot elevation range. At one station in this region, Pleiku, Viet Nam, at an elevation of 2500 feet, extreme minimum temperatures have fallen to 42°F. Anyone on any of the surrounding peaks at elevations 3000 feet higher than Pleiku would experience freezing temperatures.

Nattaung Peak (8,607) is the highest point in the Thailand Highland; however, there are several peaks above 7000 feet in this highland. Most of the peaks in the Shan Highland (Burma) are between 6000 and 7000 feet; one on the Chinese border reaches 8,835 feet. The Shan Highland is sometimes referred to as a plateau, but peak elevations vary from 4000 to 8000 feet, and the valleys are deeply dissected. On the Korat Plateau (Thailand), on the other hand, the elevations range from 300 to 700 feet, except for 3000-foot hills on the borders of the plateau. The Dong-Phraya Hills (Thailand) have a southern peak reaching 4,189 feet; another in the extreme north is 7600 feet above sea level. One peak in the Bilauktaung Mountains (Burma-Thailand) reaches 6000 feet, but most of the high points are in the 4000- to 5000-foot range. The Cardamon Mountains (Cambodia-Thailand), which include the Dangrek-Banthat Range, have several peaks above 5000 feet. In Malaysia the Pahang-Kelantan Highland, a region of dense rain forests, reaches 7000 feet. Peaks in the Pegu (Burma) and Johore (Malaysia) highlands exceed 4000 feet. Operations in these highlands require the use of at least one additional layer of clothing for each 3000 feet of altitude. During the rainy season more protection is needed from cold, especially at night; items such as quilted blankets or mountain sleeping bags should be provided (Fig. 4).

b. Lowlands

Clothing requirements do not vary in the lowland areas during the summer (wet season) months, and they continue unchanged into the winter (dry season) months, except in the extreme northern portions of Southeast Asia, such as north of Mandalay in the Irrawaddy Lowland, where an additional layer of clothing is needed at night.

The Irrawaddy Lowland (Burma) includes the valleys of the Sittang, Salween and Irrawaddy rivers and adjacent foothills. A maze of distributary streams crosses the deltas of these rivers. The southern half of this lowland is densely populated and covered with paddy rice fields.

Numerous good highways intersect the basin, and the Irrawaddy and its chief tributary (Chindwin) are navigable for craft of shallow draft for about 600 miles. The central part of the basin near Mandalay is semi-arid, deeply dissected, and has a distinctly different camouflage problem. Troops operating in this region from November to April should be provided with khaki shade No. 1 field clothing.

The Central Menam Valley (Thailand) includes the Ping, Yam, Nan, Chao Phraya and numerous other streams. Connecting these streams is a vast system of canals (Klongs). This lowland connects with the Kra Plain to the south. In the rainy season the rivers and canals fill and flow over the neighboring rice fields, giving to the valley the appearance of a large lake.

The largest lowland area in Southeast Asia is the Mekong Lowland (Cambodia-Viet Nam) which includes the Tonle Sap drainage basin and connects with the Annamese Lowland, a series of narrow coastal plains bordering the Annamese Highland on the east. The Mekong Lowland is separated from the Korat Plateau (Thailand) which is also a part of the Mekong River drainage basin, by the Dangrek-Banthat Mountains. This lowland is a major rice-growing area in Southeast Asia, is densely populated and, in addition to numerous tributary and distributary streams, contains large areas of swamp, marsh, and seasonally inundated land.

The Red River Delta (northern Viet Nam), the site of Hanoi and hundreds of villages and small towns, is one of the most densely populated areas in the world. Each settlement is surrounded by areas of intensive irrigated cultivation (Fig. 5). In this area, as in the northern portion of the Irrawaddy Lowland, the winter nights are sufficiently cold to require the use of at least one extra layer of clothing. While daytime temperatures are usually high enough for the continued use of warm weather clothing, frequent cool, cloudy days indicate a need for the Coat, man's ctn and nylon wind resistant sateen 8.5 to 9 oz. WR OG.

3. Climatic Conditions, Southeast Asia

Southeast Asia has a monsoonal tropical climate, largely a product of its peninsular location on the warm southeastern quarter of the Asian land mass. The entire peninsula lies south of the Tropic of Cancer and extends almost to the equator. It is bordered on three sides by warm seas in such a manner that no part of the region is more than 400 miles from the ocean. On the north Southeast Asia is joined to the vast reaches of interior Asia, the origin of the colder air masses of the winter season that may reach as far south as Bangkok. Station descriptions (Table II) are included to show the typical variation within Southeast Asia.

TABLE II: STATIONS USED IN TABLES OF MONTHLY VALUES

Stations	Altitude (ft)	Latitude (N)	Longitude (E)	Record (Yrs)*
Bangkok (Thailand)	7	13°44'	100°30'	17
Chapa (northern Viet Nam)	5381	22°22'	103°52'	10
Dalat (Viet Nam)	4921	11°57'	108°26'	21
Hanoi (northern Viet Nam)	23	21°03'	105°52'	30
Kota Bharu (Malaya)	20	6°08'	102°15'	8
Luang Prabang (Laos)	1115	19°53'	102°08'	**
Mandalay (Burma)	250	21°59'	96°06'	24
Nhatrang (Viet Nam)	20	12°15'	109°12'	31
Rangoon (Burma)	18	16°47'	96°13'	40
Saigon (Viet Nam)	36	10°47'	106°40'	29
Tavoy (Burma)	20	14°05'	98°12'	41

*Length of record quoted for each station is the shortest used for either temperatures or precipitation.

**Missing

The climate is characterized by alternation of wet and dry seasons. The rainy season occurs during the period of the southwest monsoon, which lasts from the latter part of April or early May to late October or early November in much of this region. The dry season is generally considered to extend from the end of one rainy season to the beginning of the next in the following year, to include the period of the northeast or winter monsoon (November through February) and the hot season (March and April). The length of the dry season is largely dependent on the distance of the area in question from the cold interior of Asia in the winter season. The Malay Peninsula south of the Kra Isthmus has no distinct dry season.

a. Temperature (Table III)

Mean monthly temperatures for the coldest months in Southeast Asia are above 50°F, except for northern Viet Nam and the high mountainous areas. In the north, the temperature differences from winter to summer are large, characteristic of continental locations, but southward this range decreases until at stations on the Malay Peninsula there is practically no variation.

In Southeast Asia the difference between nighttime and daytime temperatures is generally greater than that between winter and summer. The daily range of temperature is greater at stations in higher latitudes. The average daily range in Singapore for all months of the year is 13 degrees, whereas at Luang Prabang, the range is 31 degrees in March. Where nighttime temperatures are markedly lower than those in daytime, the Shirt, man's wool knit OG 208 may be required as a sleeping shirt.

Highest mean monthly temperatures (83° to 90°F) occur in April or May before the onset of the summer monsoon; the lowest (69° to 79°F) occur in January. Maximum temperatures above 90°F may be expected practically every day from March through October. Mid-day temperatures above 100°F are common in central Burma during April and May. Even during the cool season, except along the coast of Viet Nam and in the upper reaches of the Mekong River, mid-day temperatures are in the 83° to 87°F range. Here only the lightest weight Army clothing (warm weather) is needed (Figs. 6 and 7).

b. Precipitation (Table IV)

Annual rainfall in Southeast Asia varies from less than 30 to more than 200 inches, but averages between 60 and 100 inches at the weather stations. Definite wet and dry seasons prevail, except in southern Malaysia where the rainfall is more evenly distributed through the year. Heaviest rains are associated with the period of the summer

TABLE III: MEAN MONTHLY TEMPERATURES (°F)

Stations	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr
Bangkok	77	80	84	85	85	84	83	83	82	81	79	77	81
Chapa	48	49	57	63	65	68	68	66	65	62	57	46	60
Dalat	62	63	65	67	68	68	67	67	66	65	64	61	65
Hanoi	62	63	68	75	82	85	84	84	82	77	71	65	75
Kota Bharu	78	78	80	82	83	82	81	81	81	80	79	78	80
Luang Prabang	69	74	78	82	84	84	82	82	82	79	75	70	78
Mandalay	71	76	83	90	89	87	87	86	85	83	78	71	82
Nhatrang	75	76	78	81	83	83	83	84	82	80	78	76	80
Rangoon	77	79	84	87	84	81	80	80	81	82	80	77	81
Saigon	79	81	84	86	84	82	81	82	81	81	81	79	82
Tavoy	78	80	82	84	82	79	78	78	79	81	79	77	80

TABLE IV: MEAN MONTHLY PRECIPITATION (inches)

Stations	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr
Bangkok	0.3	0.8	1.4	2.3	7.8	6.3	6.3	6.9	12.0	8.1	2.6	0.2	55.0
Chapa	1.5	3.1	4.6	7.5	6.1	14.2	18.1	18.3	13.2	7.0	5.0	1.6	112.5
Dalat	0.4	1.0	2.2	6.5	8.5	7.3	9.6	8.3	12.1	10.0	3.9	1.1	71.0
Hanoi	0.9	1.4	1.8	3.6	8.6	10.2	13.4	13.4	10.5	4.4	2.0	1.1	71.2
Kota Bharu	10.3	6.7	7.0	4.5	6.2	6.4	5.6	6.7	8.6	11.5	22.5	27.5	123.9
Luang Prabang	0.6	0.7	1.2	4.2	6.5	6.2	8.8	11.9	6.7	2.9	1.2	0.5	51.5
Mandalay	0.0	0.1	0.2	1.1	5.5	5.4	3.4	4.1	6.5	4.7	1.7	0.3	33.3
Nhatrang	2.3	0.9	1.7	0.9	2.6	1.8	1.8	2.0	6.7	13.4	15.1	7.4	56.7
Rangoon	0.1	0.2	0.3	1.6	12.4	18.1	21.2	19.5	15.6	7.0	2.5	0.1	98.7
Saigon	0.6	0.1	0.5	1.6	8.5	12.9	12.2	10.6	13.1	10.5	4.5	2.2	77.7
Tavoy	0.2	0.5	1.3	3.4	19.8	43.5	48.9	45.0	32.6	10.4	2.3	0.2	208.3

Date in above tables are from official sources which do not quote length of record

monsoon (May-November). This monsoon is preceded, in the areas bordering the Bay of Bengal, by thunderstorms. Heaviest rainfall is recorded on the windward slopes of mountains where it may exceed, by 3 to 6 times, the amount on leeward slopes.

Although the time of the winter monsoon is the dry season for most of Southeast Asia, it is the time of the "Crachin" along the northern coast of Viet Nam. This is a series of 2- or 3-day periods of overcast skies, heavy fog and drizzle which may be expected about one-third of the time between December and March.

Throughout Burma, Thailand, Laos, and Viet Nam the monthly rainfall distribution is very uneven. Variations from year to year are also considerable. For example, during 32 years (1928-1960) at Mandalay the driest year (1931) had 23.85 inches of rain, and the wettest (1928) had 45.18 inches; during the previous 35 years the driest year (1890) had 16.8 inches and the wettest (1894) had 49.7 inches. At Singapore, however, near the equator, there is a relatively even monthly distribution of rainfall, due to its position in the belt of equatorial calms.

Rain may fall at any time, even during the dry season, and in most places the ground is too wet for sleeping. Heavy dew throughout the year in most of Southeast Asia requires that men and equipment be covered during the night. The jungle hammock will provide this protection, as well as a built-in mosquito bar.

c. Relative Humidity (Table V)

In jungle areas the early morning relative humidity is usually 100 percent, especially in the wet season. The relative humidity is notably high throughout Southeast Asia, varying from an average in the high 70's in the dry season to the middle 80's from April through November. During the latter months the average for the early morning hours is above 90 percent. Variations in relative humidity between similar environments are negligible. However, great differences (20 to 40 percent) may be observed between a forest and an adjacent clearing.

Humidity increases rapidly with the onset of the rainy season, when the average relative humidity is 95 percent or more at night, decreasing to a mean of 75 percent in mid-afternoon. During the dry season, the morning and afternoon relative humidities average 10 to 15 percent lower than in the wet season. In general, the areas of lowest humidity are those with least rainfall. For example, Mandalay with an annual average of only 33 inches of rain, has average humidities in March and April of only 54 and 58 percent respectively. Tavoy, with an annual average of over 208 inches of rain, has four months (June through September) with

TABLE V: MEAN RELATIVE HUMIDITY (%)

Stations	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr
Bangkok*	68	60	63	62	65	69	68	66	73	74	68	67	67
Chapa	78	84	86	80	79	86	86	87	90	88	87	82	84
Dalat	82	80	78	82	87	86	88	86	87	87	84	84	84
Hanoi	82	86	86	88	85	84	86	86	86	82	81	82	84
Kota Bharu*	82	81	79	79	79	80	81	81	80	83	85	85	81
Luang Prabang	83	75	71	73	80	84	87	87	86	84	84	85	82
Mandalay	83	68	54	58	71	75	75	79	83	83	85	86	75
Nhatrang	79	80	81	82	82	81	80	81	84	85	84	81	82
Rangoon	82	84	85	80	86	91	92	93	92	90	86	82	87
Saigon	77	75	74	76	83	86	87	86	88	87	84	81	82
Tavoy	75	76	74	75	85	92	93	92	92	86	80	73	83

*Data may not approximate a true diurnal mean because of an inadequate schedule of observations.

average humidities over 90 percent. An exception is Rangoon, which has five months (June through October) with average humidities over 90 percent; the annual precipitation averages 99 inches. This is an indication that much of the wet season is characterized by fog at Rangoon rather than by days with heavy rain as at Tavoy.

Clothing needs are based largely on temperature. However, in tropical regions such as Southeast Asia, high humidities can make actual relatively low temperatures seem lower, and relatively high temperatures seem higher. Dry clothing will feel comfortable at a given temperature with relatively high humidities, but when the same clothing is saturated with moisture it will feel heavy, very uncomfortable, and may actually abrade the skin. Wet boots, worn for long periods, can cause breaks in the skin, loss of skin over large areas of the foot and foot infection.

The issue of a head cloth (i.e., a square yard of cotton or poplin material) is recommended as a wipe cloth for perspiration, a wound sling, a rain hood, partial protection against insects, partial protection from glare of river water on days with bright sun, as well as for protection against sun on the neck, and many other uses. The multipurpose net (5 ft x 9 ft) weighs one pound, can be used as a lightweight hammock, improvised litter, cache for provisions, camouflage net, fish net, snipers' roost, load-carrying device or rucksack for bulky loads, animal trap, or aerial delivery container. When not in use the folded net fits in a pocket, can be attached to load-carrying harness or ammunition belt.

4. Biotic Conditions, Southeast Asia

a. Insects and Similar Pests

Anti-insect items, such as headnets, gloves, and repellents should be available for the use of field troops. As in other tropical areas with high temperature and moisture conditions, most insects are active through most months of the year, especially in the lowlands. No part of Southeast Asia is without flies and mosquitoes. Many rivers and streams and a high percentage of the cropped land which is in wet rice fields for several months of the year provide breeding habitats for mosquitoes. Sanitary conditions, primitive by European standards, particularly in the villages and rural areas, promote the development of large fly populations (Fig. 8). Among these two groups of insects are some of the most important vectors (carriers) of insect-borne diseases (Table VI).

Ticks are abundant and widely distributed. Because of favorable environments and the presence of large numbers of rodents and similar animals, mites are common, particularly in open forests and along streams.

TABLE VI: SIGNIFICANT INSECTS OF SOUTHEAST ASIA

Insect	Disease Carried	Remarks
Mosquitoes		
Anopheles	Malaria	The severe type, black-water fever, occurs in the upper part of the Black and Claire River Valleys in northern Viet Nam
Aedes	Dengue	Could carry yellow fever
Culex	Filariasis	Mostly in cities
Mansonia	Filariasis	In swamps and jungles of Malaya
Flies		
Housefly	Dysentery, Yaws, Typhoid fever	May transmit disease by biting or depositing eggs in wounds
Sand fly	Sand fly fever, Leishmaniasis	Not infected in Viet Nam
Stable fly		Severe bites
Blow fly	Intestinal diseases and Yaws	In Malaya
Midge fly		Severe bites, concentrated in Malaya
Gnats		
Eye gnats	Diseases of the eye	Bites
Buffalo gnats	Yaws	Bites
Mites	Scrub typhus	Associated with rodents
Lice		
Body lice	Relapsing fever Epidemic typhus	
Ticks		Infectious sores
Bedbugs	Many diseases	Bites
Cockroaches	Mechanical vectors of disease	

Head, body, and pubic lice occur throughout Southeast Asia. The overlapping seams in clothing are favorable places for eggs and larvae of these pests. The use of delousing powder for both clothing and body is recommended. The body louse, perhaps the most common, is capable of transmitting epidemic typhus fever and one form of relapsing fever. Several species of fleas able to transmit tropical typhus and plague have been found. Other pests include cockroaches, scorpions, spiders, and bed bugs. The latter have been found to be carriers of as many as 30 diseases.

b. Poisonous Snakes

Snakes are abundant but are seldom seen because of their nocturnal habits. During the day they hide. Only a few species are dangerous and very few are aggressive. The reticulated python, found in this region, is the world's largest snake but is not considered dangerous to man. However, poisonous snakes probably will be encountered by military personnel. There are three groups of poisonous snakes: (1) Pit vipers, some of which are arboreal; they have arrow- or heart-shaped heads and small pits between the eyes and nostrils. Their poison is hemotoxic, much like that of rattlesnakes, copperheads, and water mocassins. Their bites cause swelling and incapacitate victims but are not commonly fatal. (2) Cobras, kraits, and coral snakes are smooth or narrow-headed, usually dark-colored. Their poison is neurotoxic and much more deadly than that of the pit vipers. The cobras are very dangerous, the kraits are timid and bite only if physically hurt such as when stepped on. Coral snakes are usually small and timid and do not represent much of a hazard. (3) True vipers include Russell's Viper which is especially prevalent in Burma. It is a fawn or sand-colored snake with heart-shaped head, reported to cause more deaths than any other in Asia (although listed third in India). Its venom is hemolytic. Sea snakes are common along the coasts and can inflict deadly bites but do not attack men in the water. The only known fatalities occur when they are brought up in nets or caught on hooks by fishermen. They are easily identified by their flattened paddle-like tails.

Deaths from snake bite are few in proportion to the number bitten. The Pasteur Institute in Bangkok treated 2,218 persons for snake bites in 1952, whereas deaths from bites of venomous animals for the entire country averaged 200 between 1946 and 1950. If military personnel are supplied with first aid kits and antivenoms, the mortality from snakes should be negligible. The Pasteur Institute in Bangkok produces antivenoms for specific snakes and also polyvalent antivenom for the poisonous species of Thailand. Antivenom should be quickly available to military units in the field.

c. Poisonous Plants and Trees

Skin irritations and eruptions from contact with certain plants may result in casualties among combat soldiers operating in forests and jungles (Fig. 9). Various types of poisonous plants, having an effect similar to poison ivy and poison oak, grow in Southeast Asia. These exude serious skin irritants, and care must be taken to keep bare skin from contacting them. Microscopic fungus spores, also a constant threat, thrive on continuously moist skin surfaces and folds of skin in the axilla, scrotum, ears, and between the toes. Fungal infections can result in lesions, running sores, and disabling dermatitis.

Certain trees, such as rengas, exude a dark sap which produces blisters on the skin; these frequently become infected. A mangrove tree (buta-buta) exudes a sap which will cause blindness. When operating in forested areas, troops should wear long sleeves which are securely fastened at the wrist and long trousers tied securely around the tops of their boots. Many tropical forest trees are thorn-bearing or spiny, and require the use of heavy leather gloves if they must be handled.

5. Clothing Requirements Tables Summary

Clothing requirements for Southeast Asia, already discussed in part in the preceding paragraphs, are itemized in detail in the six Clothing Requirements tables. They may be summarized in two groups, each suitable for wear in regions with different average monthly temperatures:

Warm or Hot Weather Clothing, 68°F or higher all year.
Mild or Cool winter supplement to the above list, average temperature of coldest month, 32° to 68°F.

Lists of the clothing items for each of the above groups and each category of units (AR 320-5) are given in Tables VII and VIII. Category I units operate in the forward portion of the active combat area. Personnel in these units are usually without shelter or means of drying clothing for long periods. The clothing listed includes only the minimum essential items required to protect these troops against environmental conditions. Category II units are found forward of the Army rear boundary where housing is usually not provided. These troops must have clothing suitable for 24-hour living outdoors. Category III units are found normally in the communications zone or along lines of communication; this includes units operating at United States air bases. Semipermanent housing is usually provided for these units. Included with Category III troops are unassigned casuals, individuals not in classified units undergoing training, and bulk allotments of personnel in the

TABLE VII: WARM OR HOT WEATHER CLOTHING
(Mean monthly temperatures above 68°F all year)

Personnel in Category I and II Units	Wear	Spare
Belt trousers ctn webbing black	1	-
Boot cbt tropical mens leather and duck LMS	1	1
Buckle belt trousers brass black	1	-
Cap fld polyester and rayon gabardine OG 106	1	-
Coat mans cbt tropical ctn poplin OG 107	1	1
Drawers mens thigh lgth ctn OG 107	1	3
Poncho coated nylon twill OG 207	1	-
Shirt mans wl knit OG 208	1	-
Socks mens wl/cushion sole OG 408 stretch type	1	4
Trousers mens cbt tropical ctn poplin WR OG 107	1	1
Undershirt mans ctn qtr lgth sleeve OG 109	1	3
Personnel in Category III Units		
Boot cbt mans lthr black $8\frac{1}{2}$ in. high	1	1
Cap gar wl serge AG 44	1	1
Necktie mans four-in-hand wl tropical worsted black	1	1
Raincoat mans coated nylon twill taupe	1	-
Shirt mans ctn uniform twill khaki shade No. 1	1	1
Trousers mens ctn uniform twill khaki shade No. 1	1	2
and items listed for Cat. I and II units above.		

TABLE VIII: MILD OR COOL WINTER SUPPLEMENT TO WARM WEATHER CLOTHING
(Mean monthly temperatures 32° to 68°F during the coldest months)

Personnel in Category I and II Units	Wear	Spare
Boot cbt mans lthr black 8½ in. high	1	1
Coat mans ctn and nylon wind resistant sateen 8.5 to 9 oz. WR OG	1	-
Drawers mens 50 ctn 50 wl knit ankle lgth nat	1	1
*Glove inserts wool OG 108	1	1
*Glove shells lthr black	1	-
Shirt mans ctn sateen OG 107	1	1
*Shirt mans wl nylon flannel OG 108	1	1
*Trousers mens wl and nylon serge OG 108	1	1
Trousers mens ctn sateen OG 107	1	1
Undershirt mans 50 ctn 50 wl full sleeve	1	1

*for operations in mountain areas only

Personnel in Category III Units		
Coat mans ctn and nylon wind resistant sateen 8.5 to 9 oz. WR OG	1	-

Note: The above items will be issued in addition to the items listed in Table VII.

theater Army Replacement system. The theater commander may reclassify units when they are employed in a manner comparable to organizations in the category of the desired classification (TA 50-902, Part 1, para. 2.b.).

The tables for the six Clothing Requirement Areas of Southeast Asia are located in the back of the Almanac. Areas to which the tables apply are shown on the map following the tables (Fig. 10). For most effective use of the tables, especially in selecting from them clothing items best suited to the individual location and months of the year, the preceding text may be consulted.

All listings in the Clothing Requirements tables, as well as the summary tables, are those authorized by T/A 50-902 at the time of preparation of this Almanac. Changes in these lists may be made at any time.

6. Supplementary Department of the Army Publications

1. SB 10-523 Size Tariff for Clothing, Equipage, and Footwear (5 September 1963)

2. MIL-HDBK 150 Clothing Components for Military Uniforms (TB 700-105, 20 June 1960)

3. TB QM 13 Clothing, Equipment and Rations for Use in the Jungle (28 August 1961)

4. SB 700-20 Army Adopted Items of Materiel (June 1965)

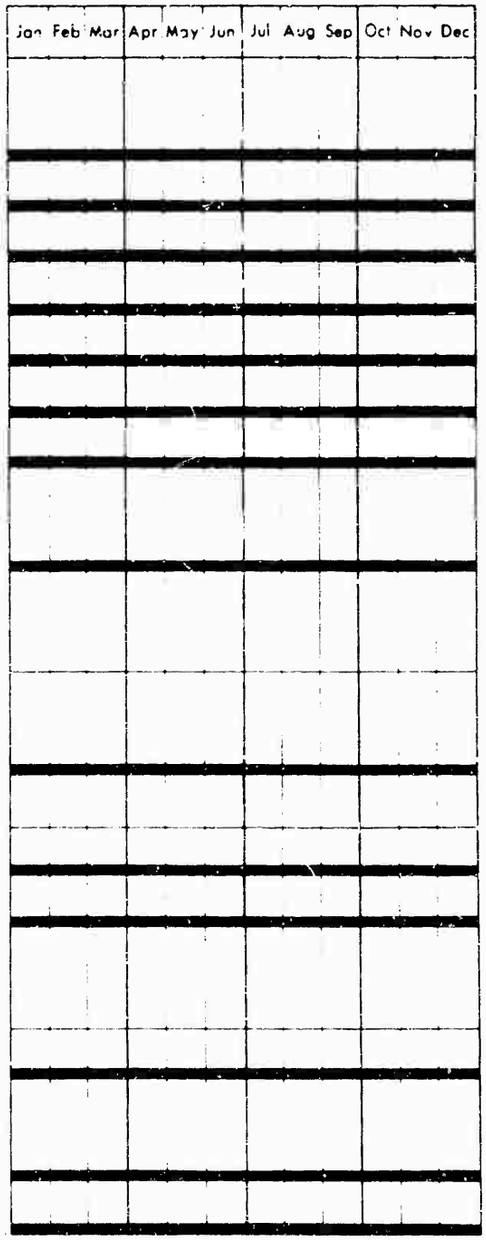
5. ITC-QM-4 Special Forces Clothing and Equipment. Quartermaster Interim Training Circular (May 1963)

6. TM-10-228 Fitting of Footwear (6 April 1956)

7. TA 50-901 Clothing and Equipment (Peace) draft

CLOTHING REQUIREMENTS

Southeast Asia I



BODY CLOTHING

Belt trousers ctn webbing black

Buckle belt trousers brass black

Coat mans cbt tropical ctn poplin WR OG 107

Drawers mens thigh lgth ctn OG 107

Socks mens wl cushion sole OG 408 stretch type

Trousers mens cbt tropical ctn poplin WR OG 107

Undershirt mens ctn qtr lgth sleeve OG 109

FOOTGEAR

Boot cbt tropical mens lthr and duck DMS

HANDGEAR

Glove shells lthr black (for insect protection)

HEADGEAR

Cap fld polyester and rayon gabardine OG 106

*Hat and mosquito net

Helmet soldier steel w/strap chin web type 1

Liner soldier steel helmet ballistic cloth OG w/headband and neckband type 1

SLEEPING EQUIPMENT

*Blanket bed wl OG 118

Liner poncho camouflage

OTHER ITEMS

Poncho coated nylon twill OG 207

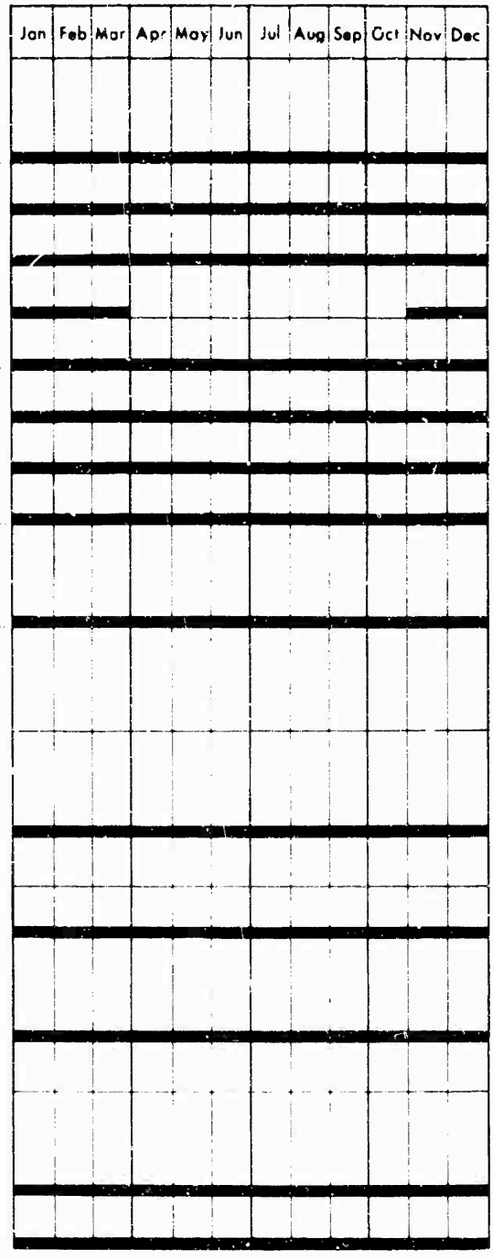
Insect bar nylon netting mildew resistant treated

item usually required in this month

* item may be issued in lieu of TA 50 902 zone item

CLOTHING REQUIREMENTS

Southeast Asia II



BODY CLOTHING

Belt trousers ctn webbing black

Buckle belt trousers brass black

Coat mans cbt tropical ctn poplin WR OG 107

Coat mans ctn and nylon wind resistant sateen 8.5 to 9 oz WR OG

Drawers mens thigh lgth ctn OG 107

Socks mens wl cushion sole OG 408 stretch type

Trousers mens cbt tropical ctn poplin WR OG 07

Undershirt mans ctn qtr lgth sleeve OG 109

FOOTGEAR

Boot cbt tropical mens lthr and duck DMS

HANDGEAR

•Glove shells lthr black

HEADGEAR

Cap fld polyester and rayon gabardine OG 106

•Hat and mosquito net

Helmet soldier steel complete w/liner and fittings

SLEEPING EQUIPMENT

Blanket bed wl OG 118

•Blanket comforter batting

OTHER ITEMS

Poncho coated nylon twill OG 207

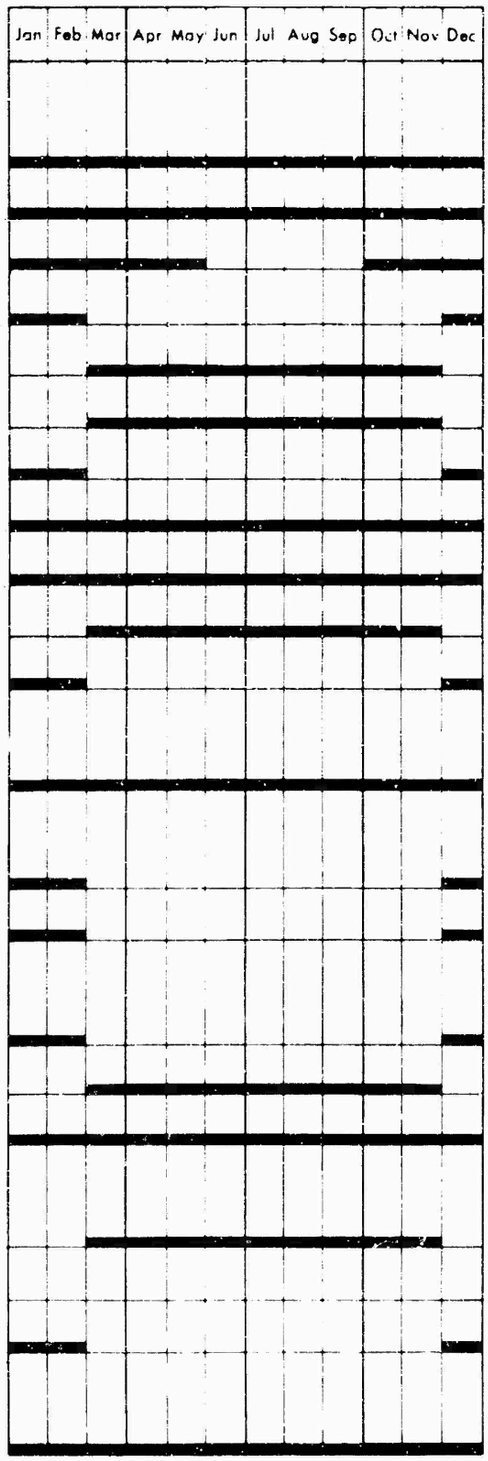
Insect bar nylon netting mildew resistant treated

▬ item usually required in this month

• item may be issued in lieu of TA 50 902 zone item

CLOTHING REQUIREMENTS

Southeast Asia III



BODY CLOTHING

Belt trousers ctn webbing black

Buckle belt trousers brass black

Coat mans ctn and nylon wind resistant sateen 8.5 to 9 oz WR OG

Drawers mens 50 ctn 50 wl knit ankle lgth nat

Drawers mens thigh lgth ctn OG 107

Shirt mans ctn sateen OG 107

Shirt mans wl nylon flannel OG 108

Socks mens wl cushion sole OG 408 stretch type

Trousers mens ctn sateen OG 107

Undershirt mans ctn gir lgth sleeve OG 109

Undershirt mans 50 ctn 50 wl full sleeve

FOOTGEAR

Boot cbt mens lthr black 8 1/2 in high

HANDGEAR

Glove inserts wl OG 108

Glove shells lthr black

HEADGEAR

Cap cold weather ctn nylon oxford

Cap fld polyester and rayon gabardine OG 106

Helmet soldier steel complete w/liner and fittings

SLEEPING EQUIPMENT

Blanket bed wl OG 118

*Blanket comforter batting

Sleeping bag mt w/carry bag

OTHER ITEMS

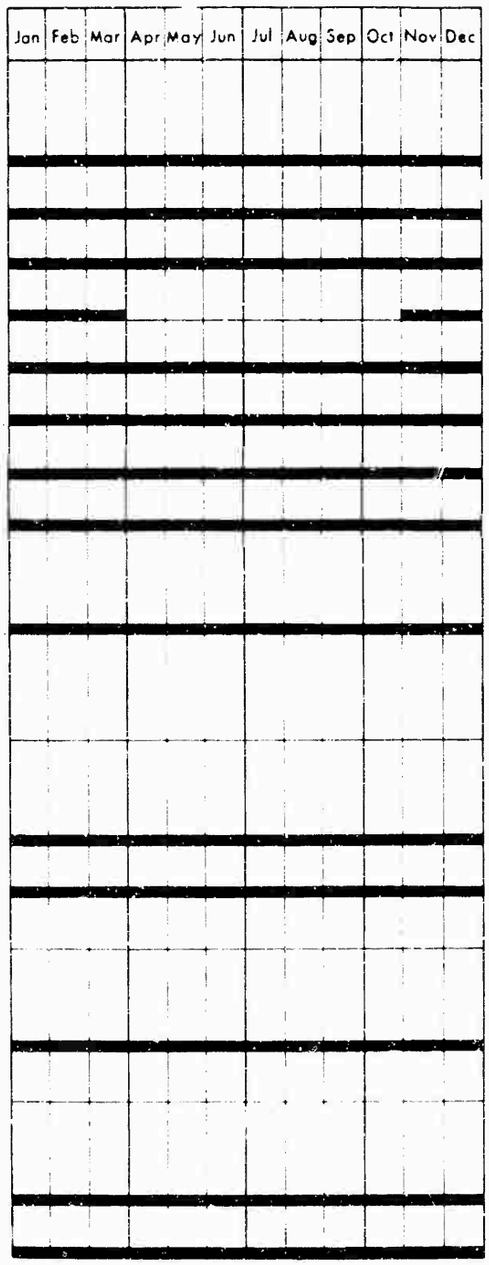
Poncho coated nylon twill OG 207

▬ item usually required in this month

* item may be issued in lieu of listed TA 50-902 zone item

CLOTHING REQUIREMENTS

Southeast Asia I



BODY CLOTHING

Belt trousers ctn webbing black

Buckle belt trousers brass black

Coat mens cbt tropical ctn poplin WR OG 107

Coat mens ctn and nylon wind resistant sateen 8.5 to 9 oz WR OG

Drawers mens thigh lgth ctn OG 107

Socks mens wl cushion sole OG 408 stretch type

Trousers mens cbt tropical ctn poplin WR OG 107

Undershirt mens ctn qtr lgth sleeve OG 109

FOOTGEAR

Boot cbt tropical mens lthr and duck DMS

HANDGEAR

*Glove shells lthr black

HEADGEAR

Cap fld polyester and rayon gabardine OG 106

Helmet soldier steel complete w/liner and fittings

*Hat and mosquito net

SLEEPING EQUIPMENT

Blanket bed wl OG 118

*Blanket comforter batting

OTHER ITEMS

Poncho coated nylon twill OG 207

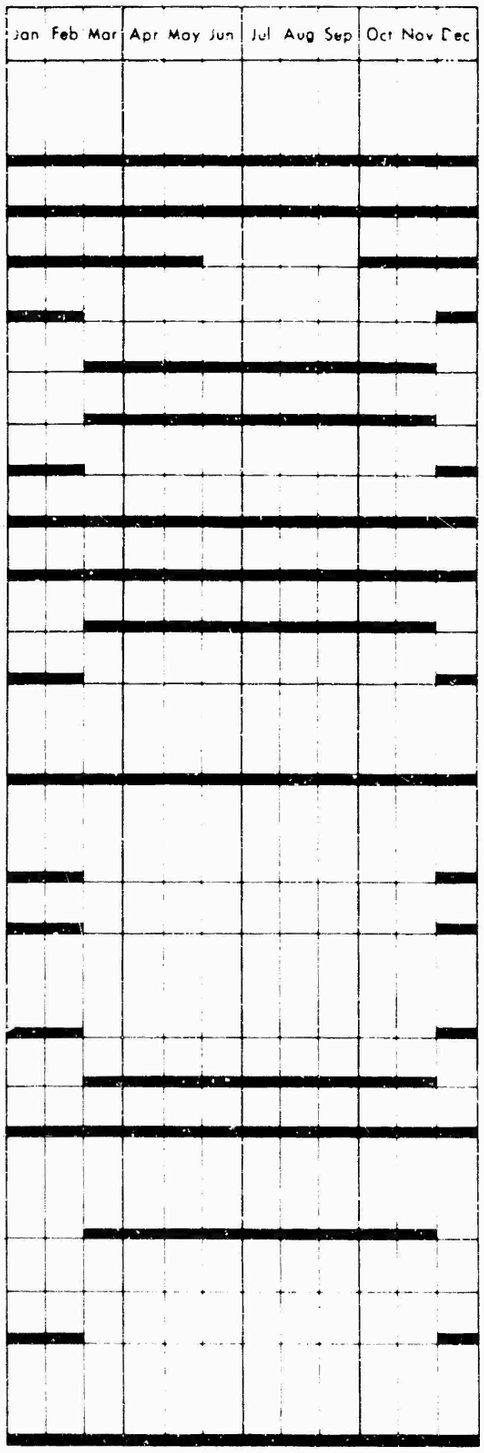
Insect bar nylon netting mildew resistant treated

▬ item usually required in this month

* item may be issued in lieu of listed TA 50 902 zone item

CLOTHING REQUIREMENTS

Southeast Asia 2



BODY CLOTHING

Belt trousers ctn webbing black

Buckle belt trousers brass black

Coat mans ctn and nylon wind resistant sateen 8.5 to 9 oz WR OG

Drawers mens 50 ctn 50 wl knit ankle lgth nat

Drawers mens thigh lgth ctn OG 107

Shirt mans ctn sateen OG 107

Shirt mans wl nylon flannel OG 108

Socks mens wl cushion sole OG 408 stretch type

Trousers mens ctn sateen OG 107

Undershirt mans ctn qtr lgth sleeve OG 109

Undershirt mans 50 ctn 50 wl full sleeve

FOOTGEAR

Boot cbt mens lthr black 8 1/2 in high

HANDGEAR

Glove inserts wl OG 108

Glove shells lthr black

HEADGEAR

Cap cold weather ctn nylon oxford

Cap fld polyester and rayon gabardine OG 106

Helmet soldier steel complete w/liner and fittings

SLEEPING EQUIPMENT

Blanket bed wl OG 118

*Blanket comforter batting

Sleeping bag mt w/carry bag

OTHER ITEMS

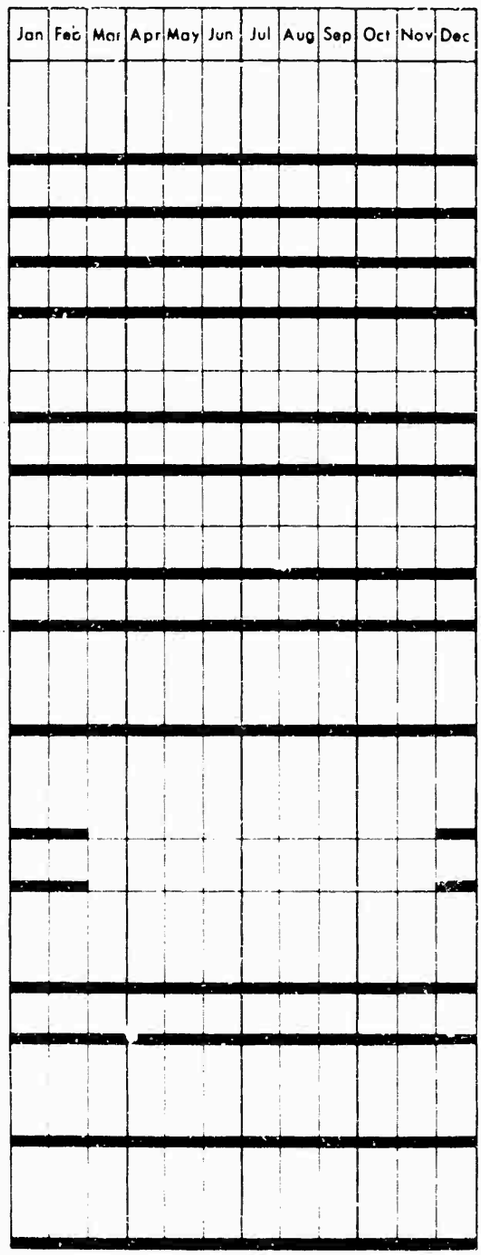
Poncho coated nylon twill OG 207

▬ item usually required in this month

* item may be issued in lieu of listed TA 50-902 zone item

CLOTHING REQUIREMENTS

Southeast Asia 3



BODY CLOTHING

Belt trousers ctn webbing black

Buckle belt trousers brass black

Coat mens ctn and nylon wind resistant sateen 8.5 to 9 oz WR OG

Drawers mens 50 ctn 50 wl knit ankle lgth nat

*Shirt mens ctn sateen OG 107

Shirt mens wl nylon flannel OG 108

Socks mens wl cushion sole OG 408 stretch type

*Trousers mens ctn sateen OG 107

Trousers mens wl and nylon serge OG 108

Undershirt mens 50 ctn 50 wool full sleeve

FOOTGEAR

Boot cbt mens lthr black 8 1/2 in high

HANDGEAR

Glove inserts wl OG 108

Glove shells lthr black

HEADGEAR

Cap cold weather ctn nylon oxford

Helmet soldier steel complete w/liner and fittings

SLEEPING EQUIPMENT

Sleeping bag mt w/carry bag

OTHER ITEMS

Poncho coating nylon twill OG 207

▬ item usually required in this month

* item may be issued in lieu of listed TA 50 902 zone item

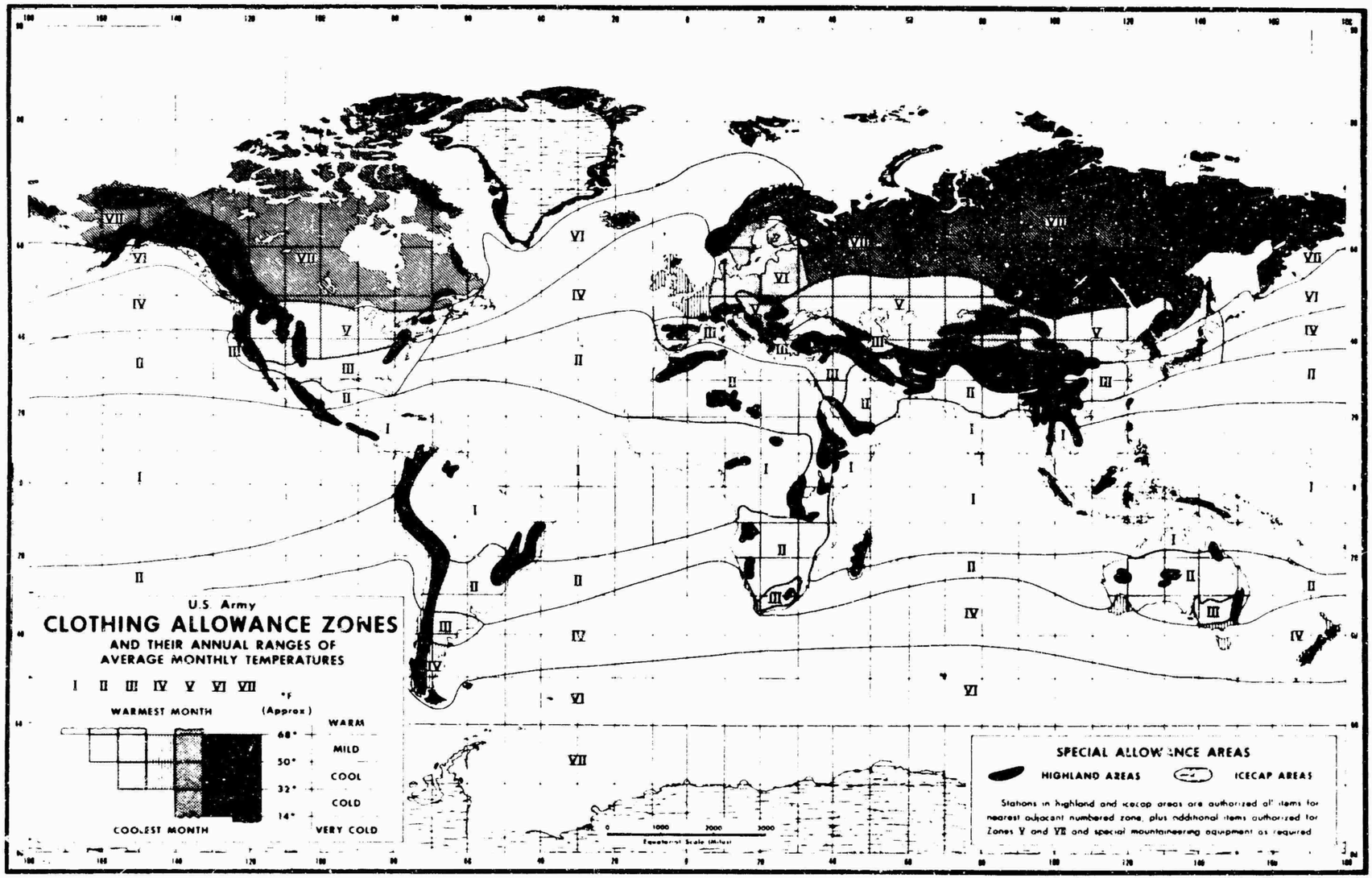

U.S. Army
CLOTHING ALLOWANCE ZONES
AND THEIR ANNUAL RANGES OF
AVERAGE MONTHLY TEMPERATURES
I II III IV V VI VII
°F
WARMEST MONTH
(Approx)
68°
50°
32°
14°
COOLEST MONTH
WARM
MILD
COOL
COLD
VERY COLD
SPECIAL ALLOWANCE AREAS
HIGHLAND AREAS
ICECAP AREAS
Stations in highland and icecap areas are authorized all items for nearest adjacent numbered zone, plus additional items authorized for Zones V and VII and special mountaineering equipment as required.

Figure 1

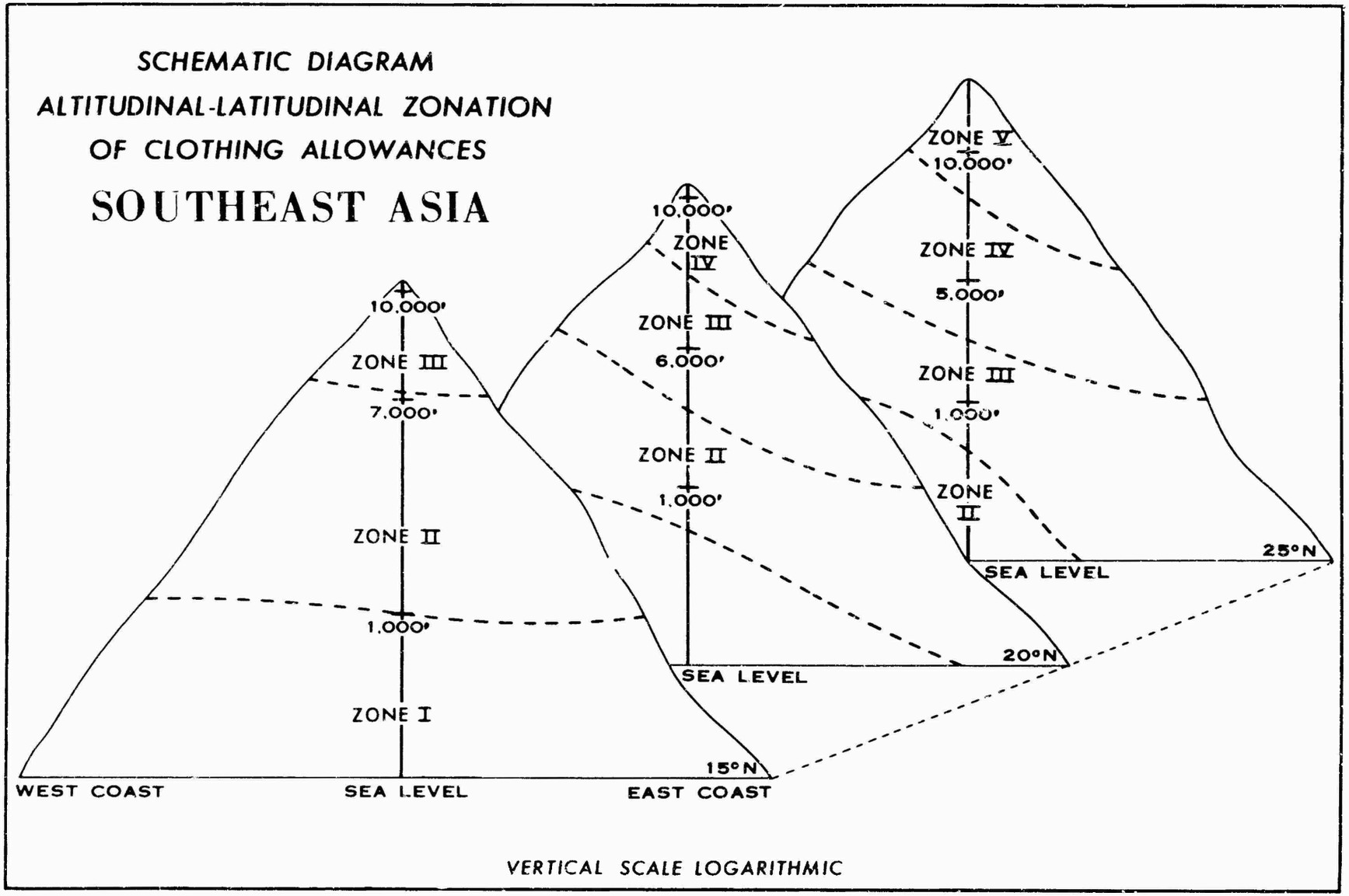

SCHEMATIC DIAGRAM
ALTITUDINAL-LATITUDINAL ZONATION
OF CLOTHING ALLOWANCES
SOUTHEAST ASIA
10,000'
ZONE III
7,000'
ZONE II
1,000'
ZONE I
10,000'
ZONE IV
ZONE III
6,000'
ZONE II
1,000'
ZONE V
10,000'
ZONE IV
5,000'
ZONE III
1,000'
ZONE II
15°N
20°N
25°N
SEA LEVEL
SEA LEVEL
SEA LEVEL
WEST COAST
EAST COAST
VERTICAL SCALE LOGARITHMIC

Figure 2

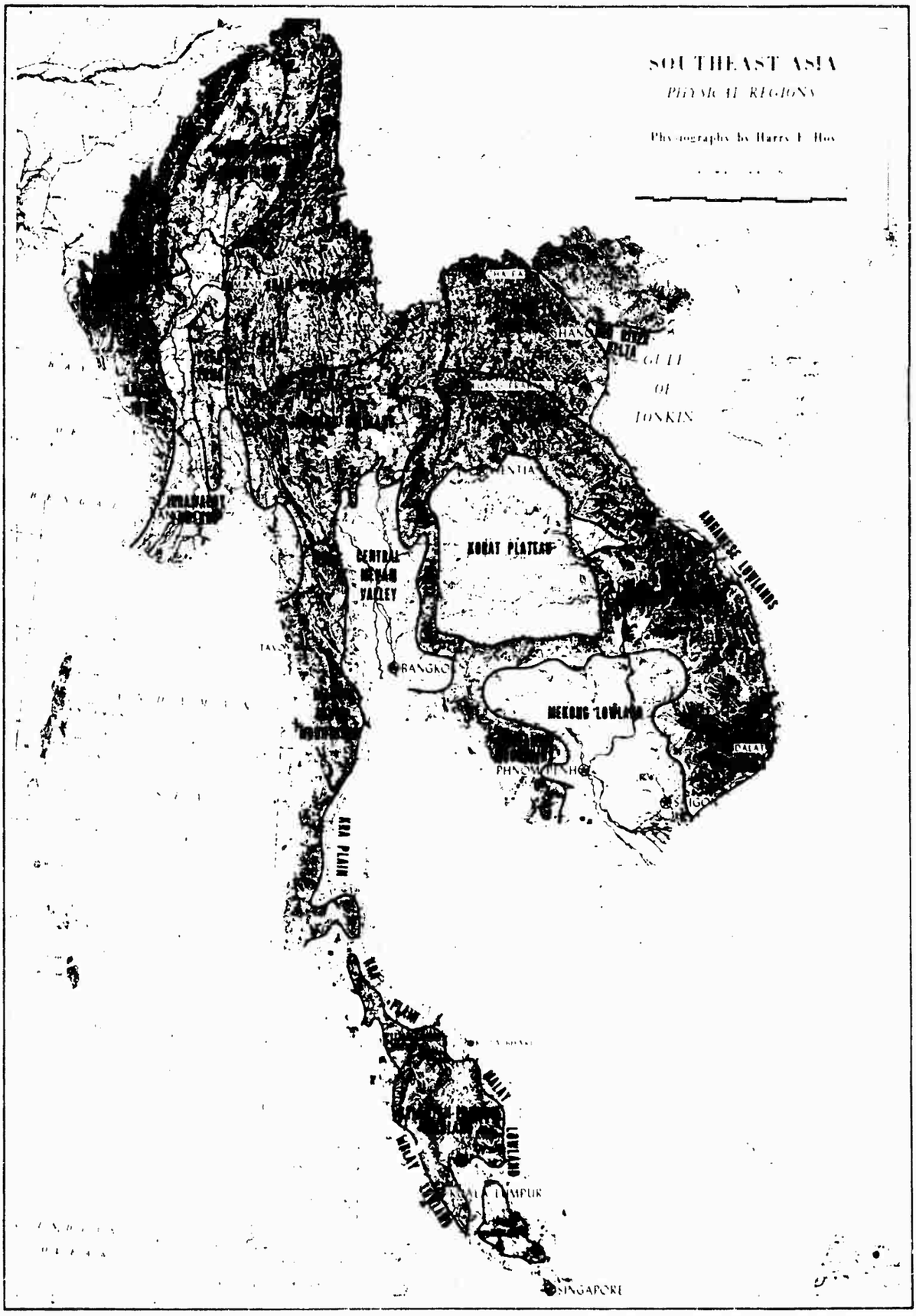

SOUTHEAST ASIA
PHYSICAL REGIONS
Physiography by Harry F. Hos
GULF OF TONKIN
KORAT PLATEAU
CENTRAL MEKONG VALLEY
ANNAMITE LOWLANDS
MEKONG LOWLAND
BANGKOK
KRA PLAIN
MALAY PENINSULA
SINGAPORE

Figure 3

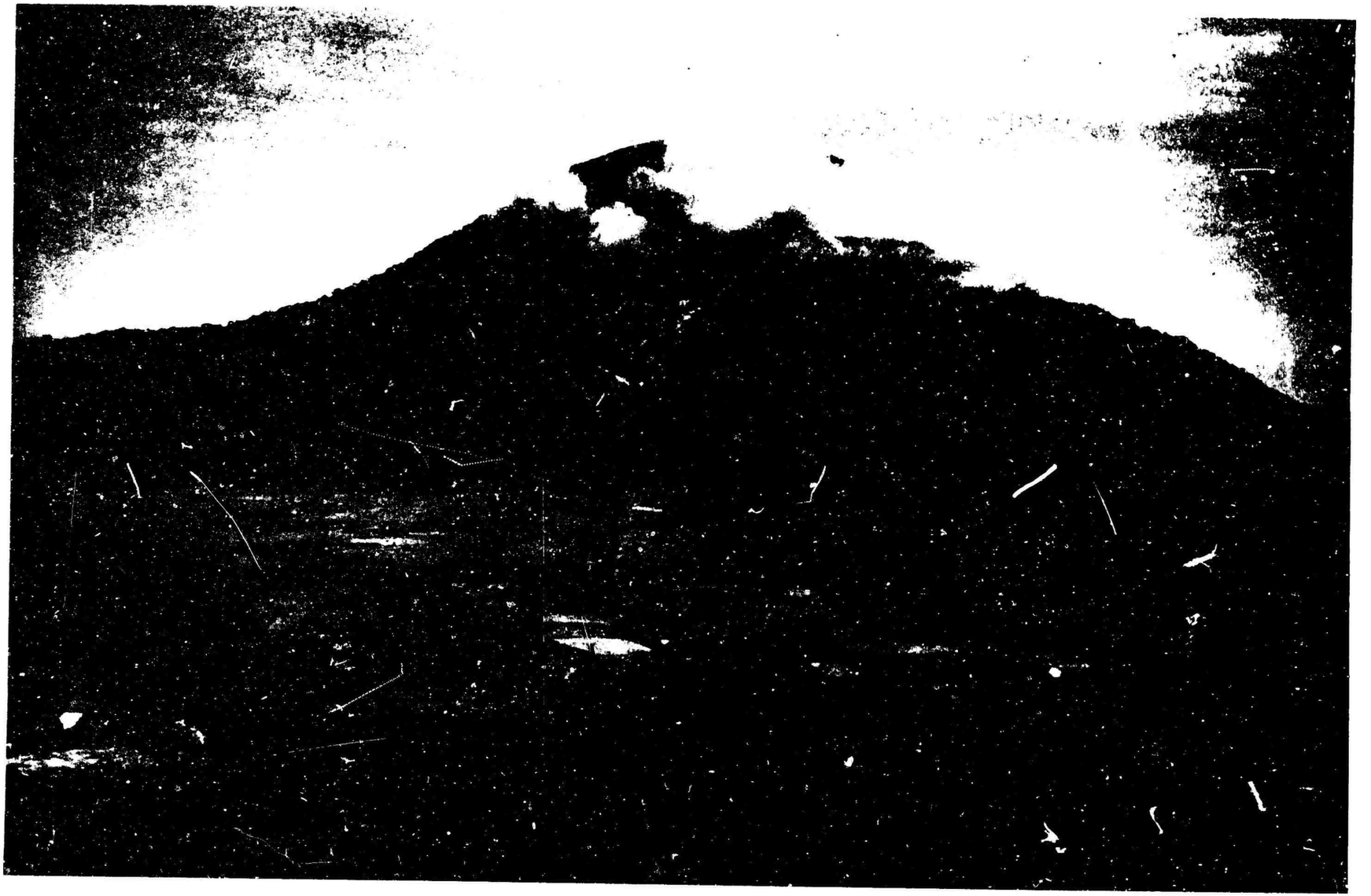


Figure 4. Operations in mountainous areas require additional items, particularly during the rainy season and at night. Commanders may authorize the issue of additional items for troops operating in these areas.

Figure 5. Rice fields, such as these in Viet Nam, account for large areas of wet ground. Footgear needs special attention in order that it be kept serviceable, flexible, and comfortable. Mosquitoes are numerous.

Figure 6. Combat troops require more protection than the indigenous population because they must move rapidly in and through the jungle with its tangle of vines and undergrowth at any time of day or night. Protection is needed against abrasion, insects, poisonous reptiles and poisonous plants.

Figure 7. Combat operations in the jungle result in severe wear and tear on light, warm-weather clothing. Traveling is more toilsome with wet footgear, and it is extremely difficult to move through the forest, except along trails.

Figure 8. Insects and other pests are usually more numerous around village areas. Sanitary conditions, primitive by European standards, promote the development of large fly populations. Lice, fleas, tropical bedbugs and mites are common.

Figure 9. The tall serrated grasses, bamboo thickets, thorny bushes and jungle forest are likely to cause excessive wear and tear on clothing and footgear. Protective clothing is essential. Local people have learned to avoid poisonous plants and barbed tangles.

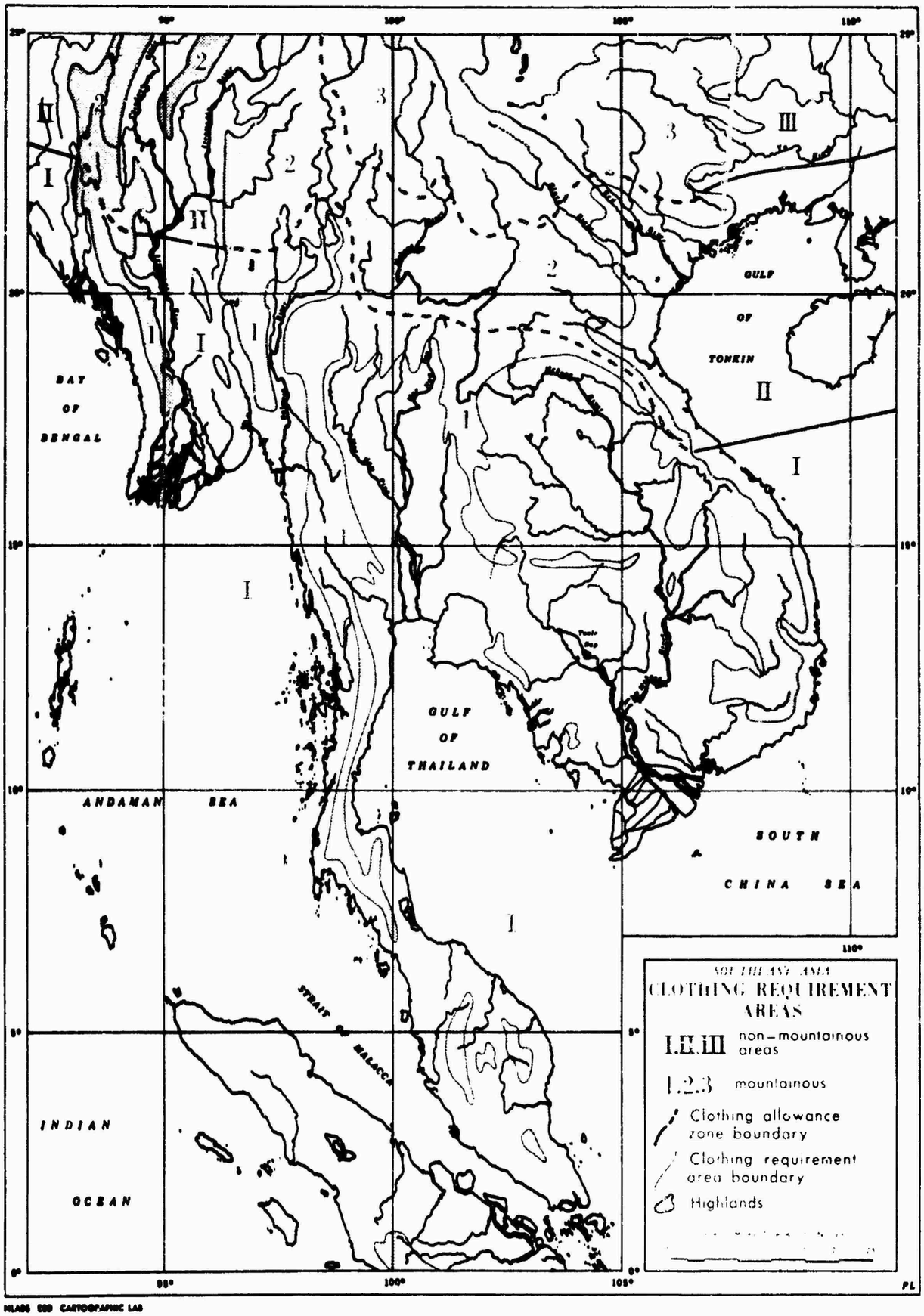

BAY OF BENGAL
GULF OF TONKIN
GULF OF THAILAND
ANDAMAN SEA
SOUTH CHINA SEA
INDIAN OCEAN
STRAIT OF MALACCA
SOUTHEAST ASIA
CLOTHING REQUIREMENT AREAS
I.II.III non-mountainous areas
1.2.3 mountainous
Clothing allowance zone boundary
Clothing requirement area boundary
Highlands
HLABS 880 CARTOGRAPHIC LAB

Figure 10

Unclassified

Security Classification

DOCUMENT CONTROL DATA - R&D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author)	2a. REPORT SECURITY CLASSIFICATION
U. S. Army Natick Laboratories	Unclassified
	2b. GROUP

3. REPORT TITLE

CLOTHING ALMANAC FOR SOUTHEAST ASIA

4. DESCRIPTIVE NOTES *(Type of report and inclusive dates)*

5. AUTHOR(S) *(Last name, first name, initial)*

ANSTEY, ROBERT L.

6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
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c.	9b. OTHER REPORT NO(S) *(Any other numbers that may be assigned this report)*
d.	ES-22

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11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY
	Earth Sciences Division U.S. Army Natick Laboratories Natick, Massachusetts

13. ABSTRACT

This Clothing Almanac supplements TA 50-902, mobilization, dated 3 April 1963. In this report monthly military clothing requirements are given for Southeast Asia, including the countries of Burma, Laos, Cambodia, Malaysia, Thailand, and Viet Nam. This region covers portions of Clothing Allowance Zones I and II, which are further divided into mountainous and non-mountainous clothing requirement areas. In general, the environmental conditions of the lowland areas in the southern half of this region require the use of Zone I clothing throughout the year. Zone II clothing is required in lowlands in the northern half of this region. Mountainous areas generally require the use of items listed for the next colder zone, or any additional item required for troop protection. Clothing items are grouped alphabetically in tables for each area. A map is provided at the back of the report to indicate the extent of each area in Southeast Asia. The almanac includes a summary of physical features of the region, high elevations, climate, biotic conditions and the relation of these features to the issue of special clothing items.

DD FORM 1 JAN 64 1473

Unclassified

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Military requirements	8					
Clothing	9					
Southeast Asia	9					

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It is highly desirable that the abstract of classified reports be unclassified. Each paragraph of the abstract shall end with an indication of the military security classification of the information in the paragraph, represented as *(TS)*, *(S)*, *(C)*, *or (U)*.

There is no limitation on the length of the abstract. However, the suggested length is from 150 to 225 words.

14. KEY WORDS: Key words are technically meaningful terms or short phrases that characterize a report and may be used as index entries for cataloging the report. Key words must be selected so that no security classification is required. Identifiers, such as equipment model designation, trade name, military project code name, geographic location, may be used as key words but will be followed by an indication of technical context. The assignment of links, rules, and weights is optional.