

M I A S M A

P H I L A T E L I S T

Sept.-Nov. 1979



Vol. 1, No. 1

## NEW JOURNAL MAKES DEBUTE

Miasma Philatelist, a new quarterly publication has just released its first issue. The newsletter's aim is to serve the needs of topical collectors of stamps, first day covers and other postal memorabilia relating to malaria -- its treatment, history, control and eradication campaigns.

This goal is to be met by offering a forum for articles on both the disease itself as well as associated philatelic events; and by providing for the exchange of information and collectables between readers.

In addition, Miasma Philatelist will feature checklists on stamps, covers, cancels and literature of interest to the malaria topical collector; and will solicit reader additions and corrections to these lists.

Editor-publisher, J. W. Dellinger, plans for this periodical to provide the source for eventual development of a definitive handbook on the malaria topic. To meet this end, Miasma Philatelist is distributed free to all known collectors with interest in any aspect of the malaria topic.

## QUALIFICATIONS LIMITED FOR OFFICIAL 1962 ANTI-MALARIA ISSUES

Collectors who specialize in the postal issues for the 1962 World Health Organization's anti-malaria campaign should be aware that certain stamps which carry the campaign's emblem or slogan -- "the world united against malaria" -- are not officially part of the WHO campaign. Whether or not this fact impacts the inclusion of the questionable issues in a collection of this sub-topic is, as always, an individual collector decision.

Official recognition is offered, naturally, by the World Health Organization -- the UN agency which sponsored the 1962 anti-malaria campaign.

Two factors impact the official status of an issue -- the source of the issue and the date of issue. Although the requested official date was April 7, 1962 (World Health Day), WHO recognition was given to any issue made in 1962. Official status was also limited to issues from postal administrations which were members of the UPU. Therefore, local carriage issues and items produced by private arrangements aren't recognized -- even when they carry the WHO campaign emblem or slogan.

For example, the issues of Costa Rica, Germany-East and Ecuador are not "official" as they were issued after the close of the campaign; Panama's CB1-3 are not given recognition by WHO as they were issued in 1961; and the issues of Lundy and South Kasai are unofficial due to their source.

In the Director-General's report on the organization's "plan for the issue of malaria eradication postage stamps" made May 11, 1963, the 144 official participating postal administrations are listed. Sixteen limited themselves to providing special cancellations, while 98 issues one or more stamps. In some cases, these participants also issued souvenir sheets and first day covers. Numerous private first day covers were also provided for the official issues. (Continued on Page 3)



## CORRESPONDENCE

O  
R     This space reserved for you, the reader! Let us know what you think  
N     about this new publication; ask questions you hope another reader can  
E     answer. If your correspondence is about any aspect of the malaria topic,  
R     it will be printed.

Send all correspondence to the editor, J. W. Dellinger, 114 Arlington,  
Elmhurst, IL 60126.

## YEMAN OVERPRINTS OFFER VARIETY, RARITY

Topical collections are usually oriented toward selection of issues because they contain either a picture or word(s) that relate to the topic, or because the issue occurred to honor an individual, institution, or event which relates to the topic.

For many topical collectors varieties in printing, perforation, watermarks, gum or non-topic-related overprints have no part in their collection -- one representative copy per issue is sufficient.

Other collectors follow both the specialists and the postal historians in expanding their "topical" collection by searching out examples of every variety as issued, copies used on every available first day cover, postal used copies (usually on cover to provide proof of use during the period of original availability), and more.

Such interest may even involve collection of artist proof copies; correspondence involving individuals, institutions and events that relate to the topic; rejected design presentation. The list of possible collateral material is endless.

For just such collectors the YEMAN Philatelic Society is credited with providing the following information on the varieties of the 1962 anti-malaria issues: Scott 135-6 (4b. and 6b.) and Minkus 188 (the 10b. souvenir sheet).

The original set was printed by the Cairo State Printers and issued 7/20/62 (WHO reports the issue date as 6/20/62 yet available first day covers are dated 7/20/62). The 4b. and 6b. appeared perforated 13½ and imperforate while the 10b. was only issued imperforate with a black inscription in English and Arabic.

Rare hand overprints in black were applied locally for the Yeman Arab Republic on 9/30/62 to the 4b. and 6b. perforated issues and the 10b.

Two printings of a "free Yeman" royalist forces overprint in black were produced on 7/11/62 at Saikaly Press, Beirut, on the 4b. and 6b. perforate and imperforate issues. Total quantity printed were 8 thousand. At the same time 2 thousand of the 10b. were overprinted. A rare, unknown quantity of these souvenir sheets appear with this overprint inverted.

In 1963 a black overprint for the YAR was produced in Sanaa (or Cairo) on the 4b. and 6b. perforate and imperforate issues. And, finally, in 1964 the royalist Yeman forces applied both black and purple hand overprints to the three basic issues (the 4b. and 6b. perforate and the 10b. souvenir sheet). All six resulting items are extremely rare.



## MORE READERS NEEDED . . .

Current readers of Miasma Philatelist have an opportunity to expand their malaria topical collection by promoting the topic to other collectors and by informing other malaria collectors about the publication.

Every additional reader expands the number who may find their duplicates on another reader's want list; or see items missing from their collection in an exchange/sales listing.

Requests for additional copies of this publication or to add a collector to our subscription list should be sent to the editor. (see page 2, Correspondence Corner, for mailing address).

## OFFICIAL 1962 ANTI-MALARIA ISSUES ... (continued from page 1)

Postal Administrations issuing stamps:

Afganistan	Oct. 5	Israel	April 30	Senegal	April 7
Albania	April 7	Italy	Oct. 31	Sierra Leone	April 7
Argentina	April 7	Ivory Coast	April 7	Somalia	Oct. 25
Bolivia	Oct. 4	Jordan	April 15	Spain	Dec. 21
Brazil	May 24	Korea-South	April 7	Sudan	April 7
Bulgaria	April 7	Kuwait	Aug. 1	Surinam	May 2
Burundi	Dec. 10	Laos	July 19	Swaziland	April 24
Cambodia	April 7	Lebanon	July 1	Switzerland	March 19
Cameroon	April 7	Liberia	April 7	Syria	April 7
Cent. African Rep.	April 7	Libya	April 7	Thailand	April 7
Ceylon	April 7	Lichtenstein	Aug. 2	Togo	June 2
Chad	April 7	Madagascar	April 7	Tunesia	April 7
China-Tiawan	April 7	Malaya Fed.	April 7	Turkey	April 7
Colombia	April 12	Maldiva Is.	April 7	USSR	May 2
Congo-Brazzaville	April 7	Mali	April 7	UAR-Egypt	June 20
Congo-Leopoldville	June 20	Mauritania	April 7	United Nations	March 30
Cuba	Dec. 14	Mexico	May 30	USA	March 30
Cyprus	May 14	Monaco	June 6	Upper Volta	April 7
Czechoslovakia	June 18	Mongolia	July 8-Aug.	Venezuela	Dec. 20
Dahomey	April 7	Morocco	Sept. 3	Viet Nam-South	April 7
Dominican Rep.	April 29	Nepal	April 7	Yeman	June 20
Ethiopia	April 7	Nicaragua	July 27	Yugoslavia	April 7
France	April 14	Niger	April 7		
French Somaliland	April 7	Nigeria	April 7	Postal administrations issuing special cancellations only:	
Gabon	April 7	Pakistan	April 7		
Ghana	Dec. 1	Panama	May 3		
Guinea	April 7	Pan. Canal Zone	Sept. 24		
Guatemala	Oct. 4	Papua & N. Guinea	April 7	Austria	Sept. 3
Haiti	May 30	Paraguay	May 23	British Guiana	April 7
Holy See	April 6	Philippines	Oct. 24	Br. Solomon Is.	May 8
Hungary	June 25	Poland	Oct. 1	Burma	April 7
India	April 7	Portugal	Mar. 12	Canada	April 1
Indonesia	April 7	Portugal-Colonies	Mar. 12	Denmark	April 7 & Aug. 6
Iran	June 21	Ryukyu Is.	April 7		
Iraq	Dec. 31	Saudi Arabia	May 7		

(continued on Page 4)



## OFFICIAL 1962 Anti-Malaria Issues.... (continued from page 3)

EAPA (Kenya, Tanganyika, Uganda)	April 2	This official listing provides data not previously reported in various ATA checklists. Handbook 40 (United Nations) does not recognize the Swaziland issue nor the special cancellations. Handbook 39 (Medical History in Philately) does not recognize a number of the special cancellations.
Federation of Rhodesia and Nyasaland	April 7	
French Polynesia	April 2	
Malta	April 7	
New Zealand	April 6	
Singapore	April 7	Also, the dates of issue on many items, as listed by the WHO Director-General, do not agree with dates referenced in current standard reference catalogs.
United Kingdom	Aug. 1	
Zanzibar	April ?	

Which date is actually correct -- if any listed is -- would require verification based on postal administration first day cancellations and UPU release/announcement material. Such a study will be reported by Miasma Philatelist if presented for publication.

## XCHANGES / \$ALES AVAILABLE

Exchange and sale offers are handled through this column on a confidential basis at a minimum (cost recovery) charge of 10¢ per listed item.

TO LIST an item for sale or as available for exchange, complete the Exchange/Sale/Want List Request on the back page and mail with payment, the listed item(s) and a SASE. When listing items for exchange, please include corresponding want list items acceptable in trade -- either specific item(s) or "any X accepted". Sale items may be listed with firm prices or BO (best offer) above a listed minimum.

Exchange/sale items will be returned 30 days after the second publication date following receipt, if not traded or purchased after two listings.

TO TRADE/PURCHASE send listed want item(s) or check and SASE. Exchange items will be shipped upon receipt of trade. Sale items will be shipped when check clears. Best Offer items will be invoiced to the top bidder 30 days after listing; shipment following payment.

#1 SALE		#2 SALE	
Afganistan M845-53* MNH	\$3.50	Bulgaria 1218-9 imperf MNH	\$1.50
Cyprus 204-5 FDC	2.50	Burundi 40-1 MNH	1.50
Ecuador C401-3 MNH	1.00	Burundi 40-41 imperf MNH	5.50
Guatemala C258 FDC	3.00	Burundi 40-41 FDC	1.50
Mauritania M189-90* MNH	3.00	Cambodia 106-8 imperf MNH	BO 15.00
Mexico RA14a Used	1.75	Comoro Is. B1 imperf MNH	BO 8.50
Surinam 304-5 FDC	1.25	Costa Rica C345-9 MNH	1.50
		Equador C401-3 imperf MNH	6.50
#3 EXCHANGE		Guinea B25-9 red op MNH	4.00
Offer - \$2 cv duplicates my choice (ten lots)		Guinea B25-9 red op FDC	2.00
Want - pictorial/slogan cancel on piece per lot		Guinea B25-9 orange op MNH	4.00
		Guinea B25-9 orange op FDC	3.50
		Haiti 486-8; C188-90 mini-sheet (12)	
		MNH	BO 10.00

\*Minkus #

(continued on page 5)



## XCHANGES / SALES AVAILABLE (continued from page 4)

#2 SALE (continued)		#4 EXCHANGE		CV
Haiti C188-90 imperf MNH	BO 15.00	offer = Afganistan 583-93 MNH		2.25
Hungary 1461a imperf MNH	BO 5.00	Cambodia 106-8 MNH		1.10
Israel 218 sheet of 15 MNH	7.00	want = Brazil 903 FDC		
Laos 74-6 imperf MNH	11.00	offer = Bulgaria 1218-9 MNH		.95
Laos 74-6 ss MNH	40.00	Burundi 40-1 MNH		3.40
S. Kasai SG 30-34 MNH	5.00	want = Bolivia 467;C245 FDC		
Thailand 373-80 MNH	2.50	offer = China, R0 1342-3 MNH		1.40
Vatican 326-9 MNH	3.00	Columbia 740-1;C426-8 MNH		2.85
Viet Nam-South 185-8 imperf MNH	BO 20.00	want = Columbia 740-1;C426-8 FDC		
#4 SALE (illustrated on pages 6-9) - - - - -				
Ethiopia 383-5 FDC	1.75	Lichtenstein 371 FDC		.50
Jordan 379-80 FDC	.50	Haiti 486-8;C188-90 FDC		.50
United Nations 102 FDC (Artmaster)	.50	WHO headquarters/regional offices Anti-		
Pakistan 160-1 FDC	.50	Malaria campaign meters on official		
- - - - -	- - - - -	covers. The full set of 8		20.00

## OTHERS ARE "IN SEARCH OF.."

"WANT LISTS" are published in this column free of charge. Resulting sales are handled on a confidential basis for a 10% processing fee -- minimum charge 25¢.

To list wanted items complete the Exchange/Sale/Want List Request on the back page and mail with a SASE to Miasma Philatelist. To offer wanted items mail it with your price clearly indicated and a SASE. Your offer will be forwarded to the want listing reader. To accept offer forward payment plus processing fee to this publication. When check clears, payment will be forwarded to the seller and purchase will be mailed.

## #2 WANT LIST

Chile Minkus 710B ss (Malaria overprint)

Chile Minkus 733B ss (Malaria overprint)

## #3 WANT LIST

Spain 1152 MaxiCard with FD cancel

Exphisalm 62 Malaria cancel on cover

Local Health Service Malaria covers/corres.

Mexico RA14 MNH

Mexico RA14a postal use cover

Mexico RA14a MNH pair

Mexico RA16 MNH

Mexico RA19 MNH

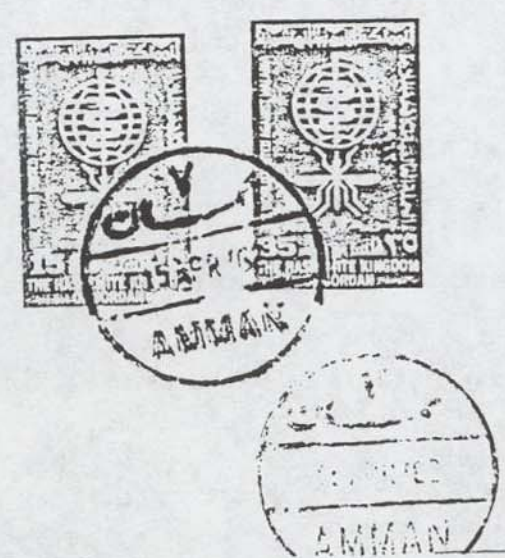
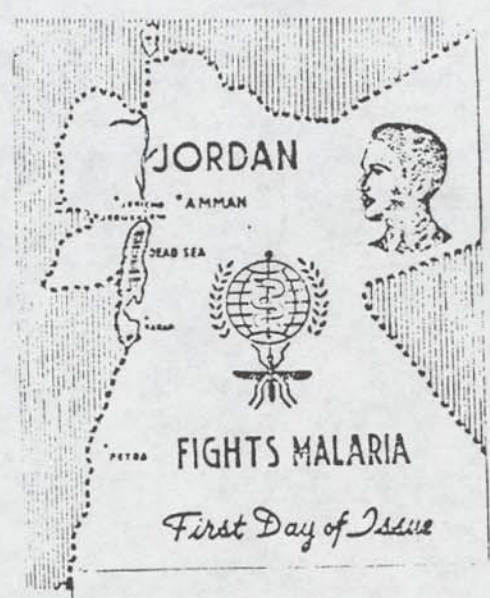
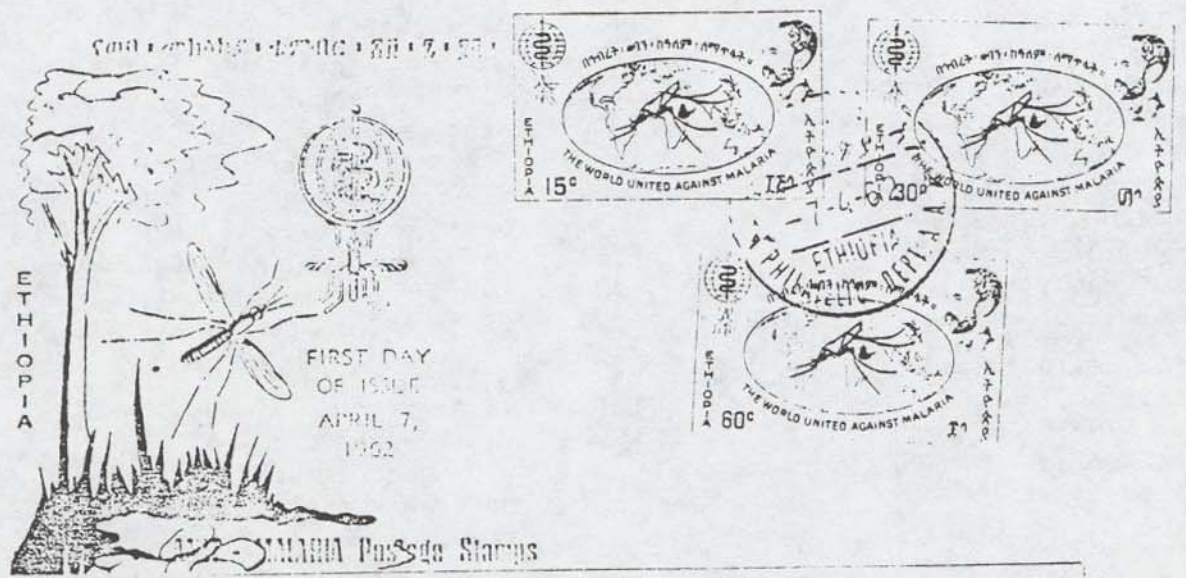
RUMOR OR FACT

## QUESTIONS ON THE MALARIA TOPIC IN NEED OF ANSWERS

1. Although Mexico appears on most existing checklists as issuing the first stamp (RA14 issued in 1939) related to malaria, can not Surinam's B4-7 issued in 1928 have the honor? As listed by Scott, its purpose was for a fund to combat indigenous diseases. Minkus states this was the governmental Heemstra Medical Foundation. - JD
2. Bhutan has been stated as having produced an appropriate overprint during the 1962 WHO Anti-Malaria campaign. Has such a stamp been seen or added to anyone's collection? Is it in any foreign catalog (not referenced by Scott or Minkus)? - AS

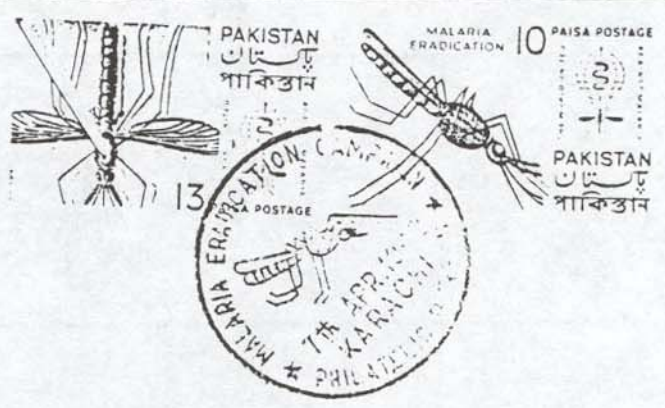
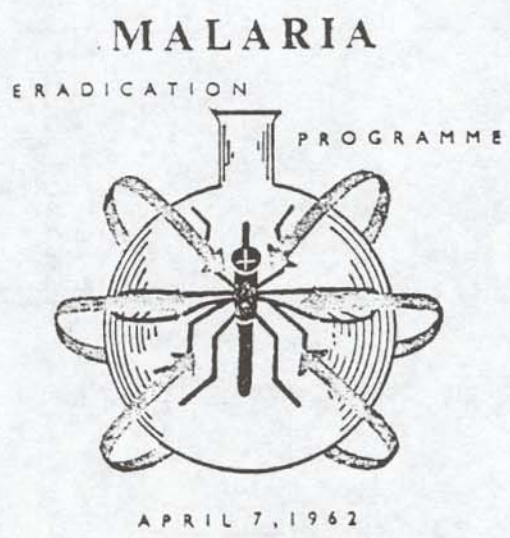
Answers, comments, and further questions should be sent to the editor, J. W. Dellinger, 14 Arlington, Elmhurst, IL 60126. General correspondence to the editor and general questions/comments will appear in "Correspondence Corner". Specific questions and answers will be presented in "RUMOR OR FACT".



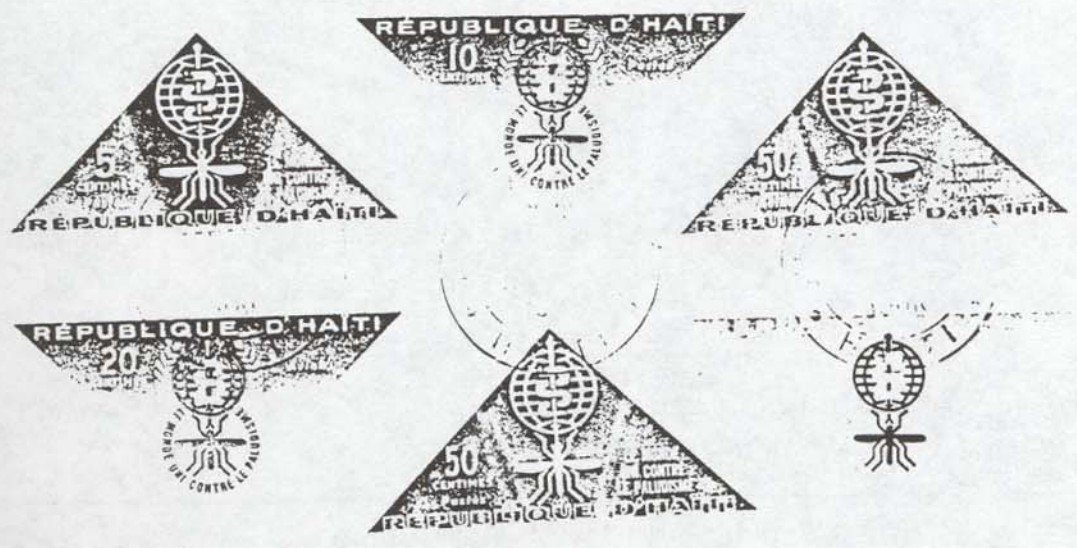
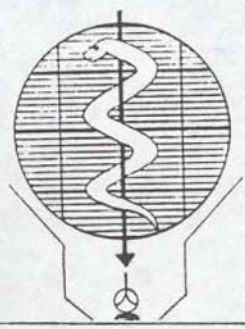


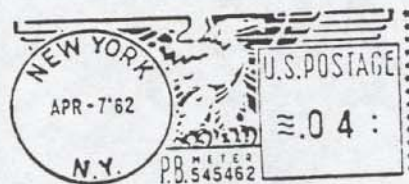
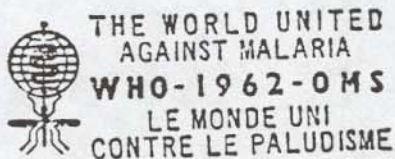
DONALD R. CRAF



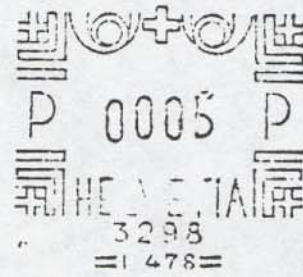


Ersttagsbrief



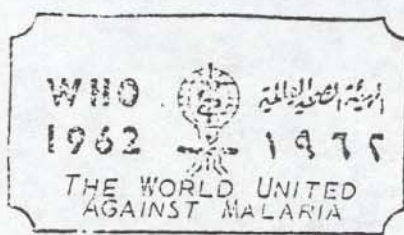
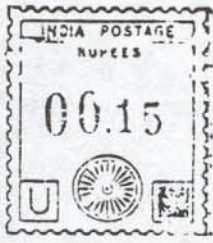


= -7 IV 62 = BRAZZAVILLE =



WORLD HEALTH ORGANIZATION  
ORGANISATION MONDIALE DE LA SANTÉ





9285

THE WORLD UNITED AGAINST MALARIA  
WHO-1962-OMS  
LE MONDE UNI CONTRE LE PALUDISME



WORLD HEALTH ORGANIZATION  
ORGANISATION MONDIALE DE LA SANTÉ



## MALARIA TOPICAL CHECKLIST

YRCOUNTRY.....	ID # CATALOG #/DESCRIPTION	SUB-TOPICS	\$CATVAL
60AFGANISTAN	0111=829=30	34B	425
60AFGANISTAN	0219=829=30 IMPERF		
60AFGANISTAN	1019=829=30 FDC		300
60AFGANISTAN	2019=829=30 IMPERF FDC		
61AFGANISTAN	0111=518=9	34B	220
61AFGANISTAN	0219=518=9 IMPERF		
61AFGANISTAN	0313=517 SS	34B	500
61AFGANISTAN	0413=517V SS IMPERF		500
61AFGANISTAN	1019=518=9 FDC GRN	34B	115
61AFGANISTAN	2019=518=9 IMPERF FDC		
61AFGANISTAN	3019=517 SS FDC GRN	34B	
61AFGANISTAN	4019=517V SS IMPERF FDC	34B	
61AFGANISTAN	401* GREEN		
62AFGANISTAN	0111=583=93	1B	225
62AFGANISTAN	0219=583=93 IMPERF	2B	
62AFGANISTAN	0313=615 SS	2B	160
62AFGANISTAN	0419=615 SS IMPERF		
62AFGANISTAN	0513=616 AIR SS	1B	160
62AFGANISTAN	0619=616 AIR SS IMPERF		
62AFGANISTAN	1019=583=93 FDC GRN (2)	34B	
62AFGANISTAN	2019=583=93 IMPERF FDC	34B	
62AFGANISTAN	201* GREEN (2)		
62AFGANISTAN	3019=615 SS FDC	N	
62AFGANISTAN	4019=615 SS IMPERF FDC	N	
62AFGANISTAN	5019=616 AIR SS FDC	N	
62AFGANISTAN	6019=616 AIR SS IMPERF FDC	N	
63AFGANISTAN	0111=861=71	1B	1000
63AFGANISTAN	0219=861=71 IMPERF		
63AFGANISTAN	1019=861=71 FDC		1000
63AFGANISTAN	2019=861=71 IMPERF FDC		
64AFGANISTAN	0113=845=52 (851 IMPERF)	3C	750
64AFGANISTAN	0219=845=49 IMPERF		
64AFGANISTAN	0313=853 SS	3C	550
64AFGANISTAN	0413=854 SS IMPERF	3C	1100
64AFGANISTAN	1009=845=52 FDC		750
64AFGANISTAN	2019=845=49 IMPERF FDC		
64AFGANISTAN	3019=853 SS FDC		550
64AFGANISTAN	4019=854 SS IMPERF FDC		2200
62ALBANIA	0111=609=12	1	130
62ALBANIA	0211=609=12 IMPERF	1	650
62ALBANIA	0313=731 SS	12	400
62ALBANIA	0413=731V SS IMPERF	12	400
62ALBANIA	1019=609=12 FDC BRN & GRN	S1	100
62ALBANIA	101* (RODIA)		
62ALBANIA	2019=609=12 IMPERF FDC	S1	
62ALBANIA	201* BRN & GRN (RODIA)		
62ALBANIA	3019=731 SS FDC BRN & GRN	S1	
62ALBANIA	301* (RODIA)		
62ALBANIA	4019=731V SS IMPERF FDC	S1	
62ALBANIA	401* BRN & GRN (RODIA)		



YRCOUNTRY.....	ID # CATALOG #/DESCRIPTION	SUB-TOPICS	\$CATVAL
54ALGERIA	0111=250-2	5P	275
54ALGERIA	0219=250-2 IMPERF		
54ALGERIA	1019=250-2 FDC		60
54ALGERIA	2019=250-2 IMPERF FDC		
52ANGOLA	0111=358	56A7	25
52ANGOLA	1019=358 FDC		10
58ANGOLA	0111=409	N	165
58ANGOLA	1019=409 FDC		90
62ANGOLA	0111=439	31	65
62ANGOLA	0119=439 FDC		30
62ARGENTINA	0111=737	23	15
62ARGENTINA	1019=737 FDC BLK (CFJ)	235A	10
62ARGENTINA	101* CORDEBA CANCEL		
62ARGENTINA	1029=737 FDC BLK (CFJ)	235A	10
62ARGENTINA	102* BUENOS AIRES CANCEL		
62ARGENTINA	1119=737 FDCARD MULTI(CFJ)	235A	10
68AUSTRALIA	0111=441	PD	50
68AUSTRALIA	1019=441 FDC		5
57AUSTRIA	0111=615	PD	425
57AUSTRIA	1019=615 FDC		210
52AUSTRIA	5019=BREGENZ CANCEL FDC	23-N	
62AUSTRIA	501* EMBOSSED INSECTS		
62AUSTRIA	5029=BREGENZ CANCEL FDC	13-1	
62AUSTRIA	502* RED & GKEY		
62BELGIUM	5019=VIELSALM EXPHISLAM62	1-1	
62BELGIUM	501* CANCEL FDC YEL & RED		
62BOLIVIA	0111=467; C245	1	80
62BOLIVIA	1019=467; C245 FDC BLK	1	70
62BOLIVIA	101* (DG DE CORREOS)		
59BRAZIL	0111=903	PD	12
59BRAZIL	1019=903 FDC		10
62BRAZIL	0111=C106	1	10
62BRAZIL	0219=SS		
62BRAZIL	1019=C106 FDC BLK & BLU	32	7
62BRAZIL	1519=C106 CC		
62BRAZIL	2019=SS FDC		
62BRAZIL	5019=MINA DE SAUDE CANCEL		
62BULGARIA	0111=1218-9	1	95
62BULGARIA	0213=1436V-7V IMPERF	1	300
62BULGARIA	1019=1218-9 FDC PUR'L	1	35
52BULGARIA	2019=1436V-7V IMPERF FDC	1	80
62BULGARIA	201* PUR'L		
62BURMA	5019=RANGUN PUR'L CANCEL	S-1	
62BURMA	501* FDC BR & GR (CGJ)		



YRCOUNTRY.....	ID # CATALOG #/DESCRIPTION	SUB-TOPICS	\$CATVAL
62BURUNDI	0111=40-1	1	340
62BURUNDI	0213=51-2 IMPERF		2500
62BURUNDI	1019=40-1 FDC BLU & BRN	1	100
62BURUNDI	2019=51-2 IMPERF FDC		2500
62CAMBODIA	0111=106-8	1	110
62CAMBODIA	0219=106-8 IMPERF	1	
62CAMBODIA	3019=106 SS		
62CAMBODIA	0419=107 SS		
62CAMBODIA	0519=108 SS		
62CAMBODIA	1019=106-8 FDC GRN	1	90
62CAMBODIA	1029=106-8 FDC BLU RED &	1	90
62CAMBODIA	102* BLK		
62CAMBODIA	2019=106-8 IMPERF FDC		
62CAMBODIA	3019=106 SS FDC		
62CAMBODIA	4019=107 SS FDC		
62CAMBODIA	5019=108 SS FDC		
63CAMBODIA	0111=811-2 RED CROSS OP	1	135
63CAMBODIA	0219=811-2 IMPERF	1	
63CAMBODIA	1019=811-2 FDC		135
63CAMBODIA	2019=811-2 IMPERF FDC		
68CAMBODIA	0111=192	247	45
68CAMBODIA	1019=192 FDC		30
62CAMEROON	0111=836	1	60
62CAMEROON	0219=836 IMPERF		
62CAMEROON	0319=836 PS		
62CAMEROON	1019=836 FDC BRN & GRN(PJ)	3	60
62CAMEROON	2019=836 IMPERF FDC		
62CANADA	5019=MONTREAL CANCEL	13	
62CANADA	501* FDC BLU		
62CANADA	5119=OTTAWA CANCEL		
62CANADA	5219=WINNIPEG CANCEL		
62CANAL ZONE	0111=C33	23	40
62CANAL ZONE	1019=C33 FDC (STOCK SMITH	N	35
62CANAL ZONE	101* AIR MAIL)		
62CANAL ZONE	1119=C33 BLOCK-4 FDC	23	
62CANAL ZONE	111* SILVER (VG)		
62CANAL ZONE	1129=C33 BLOCK-4 FDC	371	
62CANAL ZONE	112* RED & BLU (SMITH)		
62CANAL ZONE	1519=C33 CC	N	
52CAPE VERDE	0111=287	57	45
52CAPE VERDE	1019=287 FDC		35
58CAPE VERDE	0111=303	N	300
58CAPE VERDE	1019=303 FDC		150
62CAPE VERDE	0111=326	31	55
62CAPE VERDE	1019=326 FDC		45

(to be continued in the next issue)



Colors for cachets are listed from top left to center of the design area. Subtopic codes are given for each key item. Two sets, separated by a dash, appear for special (continued on next page)

## \*

USE THE BACK OF THIS FORM TO ORDER EXCHANGE/SALE/WANT LISTINGS.







LATE NEWS OF INTEREST (FROM THE FT. LAUDERDALE NEWS, AUGUST 10, 1979)

# Malaria Is Out Of Control

By Joel E. Cohen

**NEW YORK** — Malaria is coming back. In the five years before 1978, according to the director general of the World Health Organization, there was "on average, taken globally, more than a twofold increase in the number of cases reported."

"In some countries," he added, "the increase has reached dramatic proportions, with the areas showing a thirtyfold to fortyfold increase compared with 1969-70; thus malaria is again in some instances endangering not only the health of the population but also overall socio-economic development."

The rise in the number of cases confirmed by laboratory examination and reported by services is not the result of larger malaria detection programs. On the contrary, some earlier efforts at eradication have been reduced to efforts at control.

Global statistics exclude China, Cambodia and Vietnam, for which figures were not available, and all of Africa, for which the figures were unreliable. Even so, the director general reported a rise from 3,251,000 confirmed new cases in 1972 to 7,517,000 confirmed new cases in 1976, an increase of 131 percent.

The World Health Organization estimates that in Africa alone, a million people, mostly children, die every year from malaria. In the 1950s and the 1960s, WHO aspired bravely to eradicate malaria from the globe. Why did the effort fail?

Lack of money is certainly part of the answer. In 1978, the Rockefeller Foundation estimated

that world funding for research in malaria was \$5 million, or less than 2 cents a year for each of the 300 million people affected. In that year, the United States government alone spent \$815 million for research on cancer, with a world prevalence of roughly 10 million people.

In 1971, in 25 African countries for which the details are available, the average annual per-capita health budget was \$1.20. But the anti-malarial campaigns were substantially supported with outside funds, and still they failed. Why?

Darwin's evolution by natural selection is a big part of the answer. The mosquitoes that carry the parasite evolved. So did the parasites themselves.

Before anti-malaria programs began, mosquitoes in one species that transmits malaria came to rest on inside walls of a house after taking a blood meal from an occupant. In eradication programs, insecticide was applied to inside walls. The mosquitoes that landed elsewhere survived. Only the survivors had offspring. Since the behavior involved in choosing a place to rest is partly transmitted by genes, the resulting populations of mosquitoes subsequently came to rest outdoors after biting.

Some of the mosquitoes that transmit malaria parasites, rather than adapting their behavior, evolved resistance to the cheap and widely used insecticides. The alternative insecticides were too expensive to use.

The malarial parasites also evolved — to escape control by drugs. In the Americas, South-east Asia and the Pacific, *Plasmodium falciparum*, the most virulent of the species that infect humans, became resistant to 4-amino-

quinolines, a family of drugs widely used to prevent and treat malarial infections.

The lesson of hindsight is that evolution by natural selection can be a wily foe. There are plausible arguments that malaria has evolved along with its hosts since at least as early as vertebrate evolution as the rise of the reptiles. Malaria is still a moving target.

Now there is new hope. In 1976, two scientists discovered a way to grow sustained cultures of the parasite *Plasmodium falciparum* under glass. Previously, it had been possible to obtain only limited quantities of malarial parasites by infecting birds or monkeys in the laboratory.

This technique "has translated malaria vaccination to the realm of practical feasibility since it provides a potential source of antigen for mass vaccination," according to S. Cohen, of Guy's Hospital, London.

But hope should not be naive. The most likely target for vaccines is now believed to be the malarial blood forms, the stage of the parasite's life cycle that lives in a person's red blood cells. If the malarial parasites can evolve to escape previously lethal drugs, it is possible that the notably variable antigens on the surface of malarial blood forms can also evolve to escape host antibodies stimulated by a vaccine.

The possibility exists that there will never be a single unchanging malaria vaccine but that, as in influenza, the target always will be moving.

Joel E. Cohen is professor of populations at the Rockefeller University.