DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Centers for Disease Control
and Prevention (CDC)

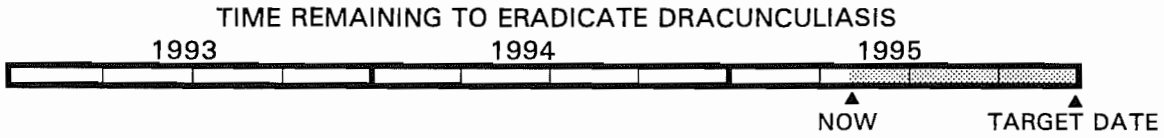
Memorandum

Date May 1, 1995

From WHO Collaborating Center for
Research, Training, and Eradication of Dracunculiasis

Subject GUINEA WORM WRAP-UP #48

To Addressees



SUDAN: CARTER NEGOTIATES "GUINEA WORM CEASE-FIRE"; NATIONAL CONFERENCE HELD

GLOBAL 2000

UNICEF

Global 2000 chairman and former U.S. President Jimmy Carter has negotiated a two-month long "Guinea worm cease-fire" between the Government of Sudan and opposing forces. The cease-fire, which has temporarily halted the 12-year old civil war, went into effect at midnight March 28/29, 1995. In an article entitled "Guinea worm cease-fire" in Cairo's English language weekly Al-Ahram (April 6-12), correspondent Mohamed Saleh reports that "The dove is the usual symbol of peace. But in Sudan it is the worm which is attracting attention." The main purpose of the cease-fire is to permit accelerated efforts towards the eradication of dracunculiasis in southern Sudan and, in addition, to promote treatment of onchocerciasis, immunization of children (especially against polio and measles), and a few other priority interventions.

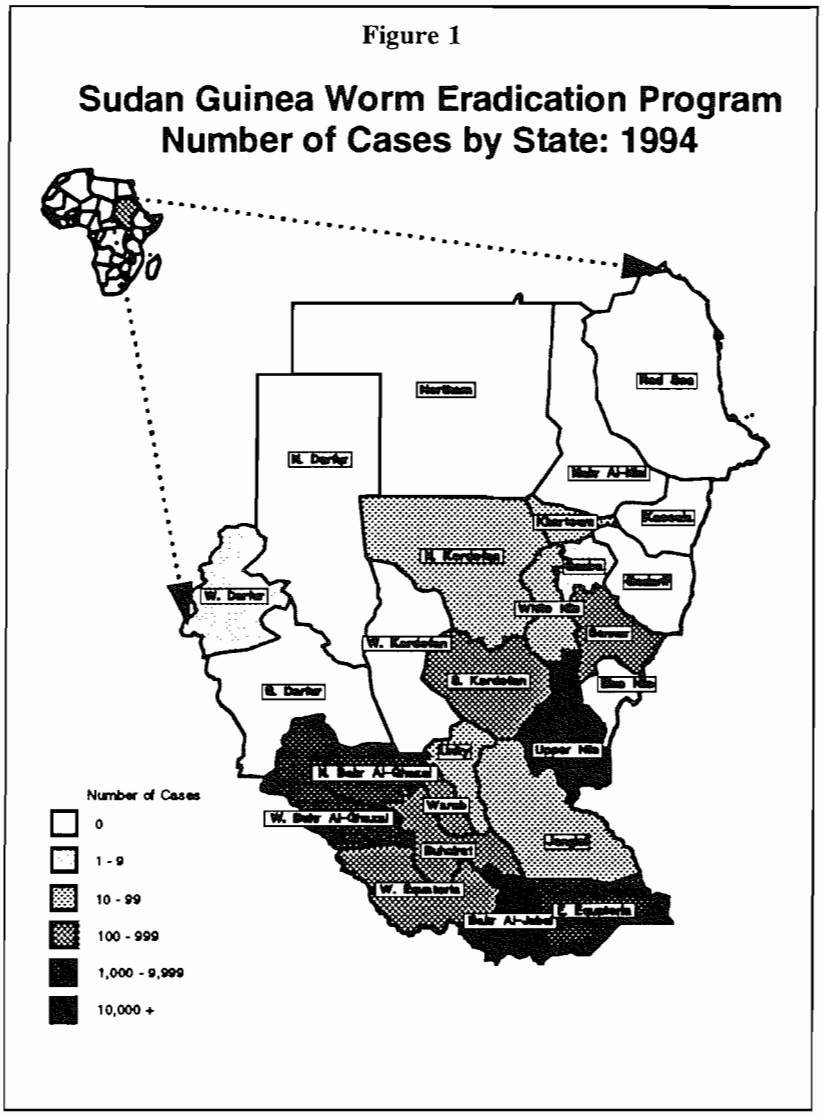
A total of 53,271 cases of dracunculiasis, in 780 endemic villages, were reported to WHO by Sudan for 1994, making it the most highly endemic country remaining (Figure 1, Table 1). Moreover, southern Sudan includes the most hyperendemic areas for blinding onchocerciasis known in the world.

The cease-fire was announced at a press conference by Sudanese President General Omer Hassan al-Bashir and former President Carter a few hours after General al-Bashir presided at the opening session of the first National Conference on Guinea Worm Eradication in Sudan, on March 27, at the Friendship Hall in Khartoum. In addition to Presidents al-Bashir and Carter, also on stage at the opening ceremony were the minister of health of Sudan, Lt. Col. G. Deng Gareng; the national coordinator, Dr. Nabil Aziz; and the resident representatives of UNICEF and WHO. The minister of health of Uganda, Dr. James Makumbi, also attended the conference, and Kenya's minister of health was represented by Dr. John Ouma. President Carter announced additional support by Global 2000 to the Sudan Guinea Worm Eradication Program and to associated efforts by Operation Lifeline Sudan (Southern Sector), including immediate opening of a Global 2000 office with a resident advisor in Khartoum, and a subsidiary office in Nairobi. Dr. Donald Hopkins and Mr. Andrew Agle of

Global 2000 ledCarter Center teams to Khartoum and Nairobi, respectively, the following week to assist in the intensive preparations for activities to be conducted during the cease-fire, and to open the Global 2000 offices in those two cities. President Carter also sent his son, "Chip" Carter, as his personal representative to Khartoum and Nairobi in the ensuing two weeks.

During his visit to Khartoum, President Carter also met with the minister of health, Lt. Col. G. Deng Gareng, and the minister of irrigation, Dr. Yagoub A. S. Musa. In Nairobi, he met with Dr. John Garang, leader of the Sudan People's Liberation Movement, and Comdr. Riek Machar, of the South Sudan Independence Movement, as well as Mr. Philip O'Brien, director of Operation Lifeline Sudan's Southern Sector, and other OLS and UNICEF officials, representatives of 11 NGOs working in collaboration with OLS (including the Sudan Relief and Rehabilitation Association (SRRA) and the Relief Association of Southern Sudan (RASS), and representatives of 11 donor countries or agencies.

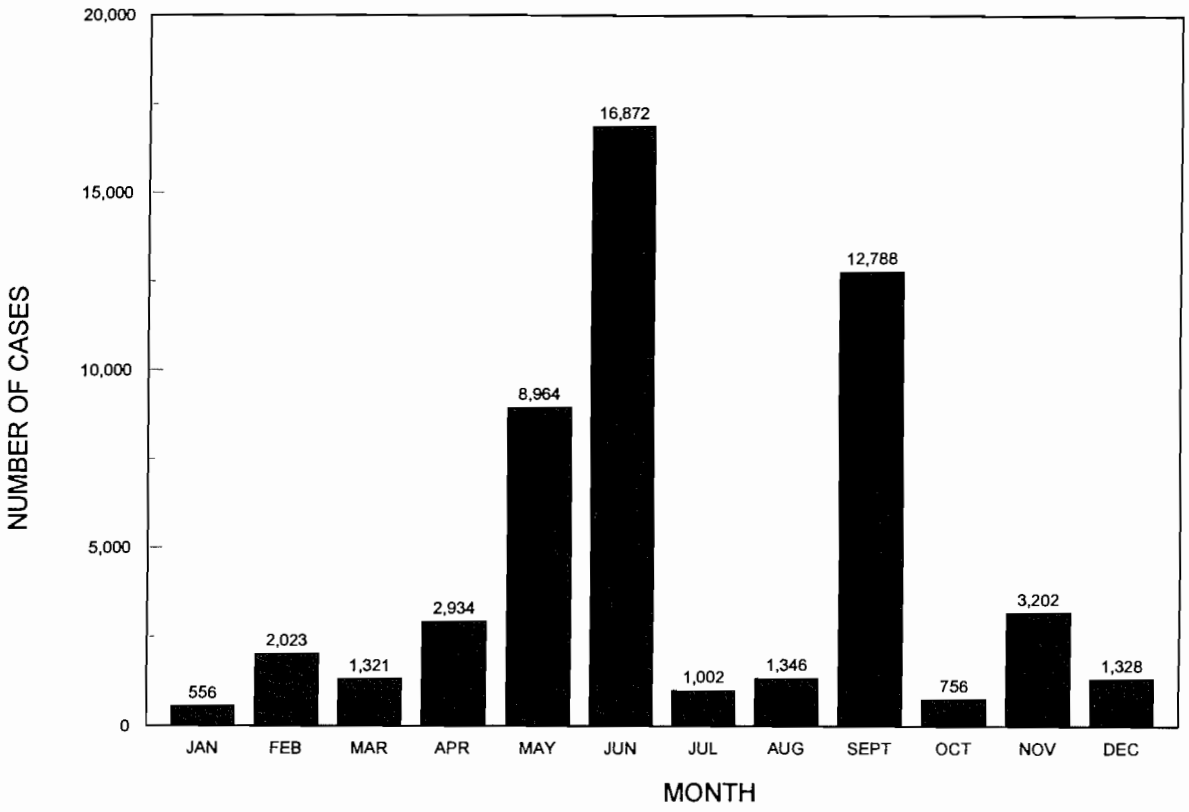
Figure 1



This cease-fire provides health authorities on both sides an unprecedented opportunity and challenge to advance dracunculiasis eradication efforts rapidly before this year's peak transmission season begins in June (Figure 2, monthly cases reported in 1994). The resulting Sudan Cease-Fire Health Initiative is now well underway. In addition to reaching all 780 villages now known to be endemic for dracunculiasis in Sudan (to provide cloth filters, health education, and training of village-based health workers) during the cease-fire, over 130,000 persons are intended to be reached with 200,000 ivermectin tablets, and workers will seek to identify other villages where dracunculiasis exists. Over 100,000 doses of measles vaccine and polio vaccine are also expected to be delivered, along with tens of thousands of doses of vitamin A. The Sudanese military began transporting medical supplies, including 260 bicycles provided by UNICEF and 57,000 square yards of filter cloth, to staging areas in southern Sudan, at the personal direction of President al-Bashir. Operation Lifeline Sudan has airlifted 10 four-wheel drive vehicles into the area as well. On April 27, representatives of the Government of Sudan (dracunculiasis, onchocerciasis, and

immunization leaders from the ministry of health) met in Juba, Sudan, with their counterparts from relief agencies in Kenya to discuss strategies, coordination, and plan joint action.

Figure 2 **SUDAN GUINEA WORM ERADICATION PROGRAM**
MONTHLY DISTRIBUTION OF 53,092 CASES OF DRACUNCULIASIS: 1994*



* CASES REPORTED FROM ACTIVE AND PASSIVE SURVEILLANCE

As a reminder of how smallpox was eradicated in this part of Africa 20 years ago, under similarly difficult conditions, we include here a description from the book Smallpox and its Eradication (Frank Fenner et al, Geneva: World Health Organization, 1988; pp. 1020-1021). During the early months of 1974, health staff from the French Territory of the Afars and Issas (now Djibouti), Kenya and Sudan provided special assistance to the Smallpox Eradication Program of Ethiopia, by working in parts of Ethiopia which were more easily accessed from the neighboring countries than from within Ethiopia itself. Most exceptional was the assistance provided by health workers from Sudan in Ethiopia's Western Gojam Province:

> *"Search and vaccination in the difficult area of western Gojam Province were undertaken by a Sudanese team in a journey characterized by great ingenuity and determination. Travelling in 3 Land Rovers, 12 persons required 2 months to traverse some 250 kilometers through Gojam Province from the Sudanese border to the town of Bahir Dar in Ethiopia. Led by a Sudanese sanitarian, Mr. Abdul Gadir El Sid, the team had to carry with it all the petrol and most of the supplies needed. Sudanese pounds were acceptable currency for the purchase of food over half*

the distance; for the last part of the journey, the team members needed Ethiopian dollars, and to obtain them they sold a supply of blankets which they had brought with them just for this purpose. The "roads" over which they travelled had not been traversed for years. It was necessary for them to construct bridges and in many areas to walk ahead of the vehicles, clearing a path with large knives. In some places, the underbrush was so dense that it had to be burnt (on one occasion the flames nearly consumed one of the vehicles). Mechanical breakdowns, poisonous snakes, wild animals and insects were daily problems. Nevertheless, they persisted in their journey, during which they contacted and vaccinated some 20,000 people but found no smallpox. They were gratefully received in Bahir Dar by Ethiopian staff, provided with Ethiopian dollars and, after a brief rest, returned home by the same route."

MAJOR NEW DONATIONS

KEIDANREN

Keidanren

Representatives of the Keidanren, a federation of about one thousand private Japanese corporations, recently informed the Carter Center that they would donate over $1.5 million in four-wheel drive vehicles and motorcycles to Global 2000 for dracunculiasis eradication programs in Africa. The donation was announced by President Jimmy Carter in his address to Sudan's national Guinea Worm Eradication Conference on March 27. The Keidanren, which will celebrate its 50th anniversary next year, responded to a personal appeal by President Carter. The Keidanren has worked in close collaboration with the Japanese Ministry of Foreign Affairs in arranging this donation. The vehicles are expected to be delivered in about July 1995. A total of 40 four-wheel drive vehicles and 72 motorcycles are involved. Twelve of the vehicles and 26 of the motorcycles are for Sudan. The others have been allocated among Benin, Burkina Faso, Chad, Niger, Nigeria, Senegal, Togo, Uganda, and Yemen (Côte d'Ivoire, Ethiopia, Mali, Mauritania, Senegal, and Yemen will not receive motorcycles).

THE NETHERLANDS

The honorable J.P. Pronk, minister for development cooperation of The Netherlands recently informed President Jimmy Carter that the Government of The Netherlands would provide over $800,000 for the Sudan Cease-Fire Health Initiative, through the Carter Center. This donation was in reponse to an appeal by President Carter, and reflects the Government of The Netherlands' and Minister Pronk's long standing interest and involvement in promoting peace and health in Sudan.

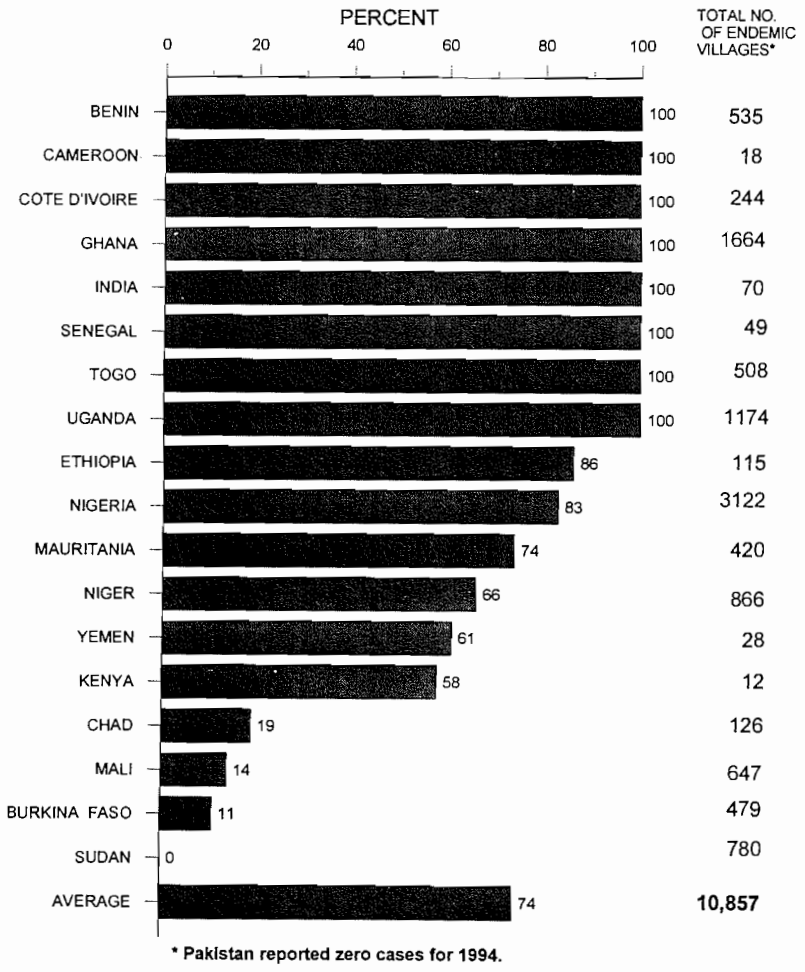
McCONNON

Mr. Henry McConnon, a prominent businessman, recently donated to Global 2000 stock certificates worth over $400,000, the proceeds of which he designated to be used in support of dracunculiasis eradication in Africa. This was the third major donation (totaling over $750,000) to the dracunculiasis eradication campaign since 1991 by Mr. McConnon.

CASE CONTAINMENT: 74% OF ENDEMIC VILLAGES COVERED

As shown in Figure 3, at the end of April 1995, village-based health workers in approximately 74% of all remaining endemic villages had been trained and supplied to undertake case containment measures. Of the endemic villages which have not yet begun case containment, most are in Burkina Faso and Mali, both of which are scheduled to complete their training by the end of May, and in Sudan, where intensive control measures short of case containment are just being put into place during the cease-fire. The goal had been to have all endemic villages under case containment by the end of 1994. Ethiopia's program has attained complete coverage except for the 16 endemic villages in Akobo District of Gambella Region, where access may be easier from the Sudanese side of the border. Meanwhile, several endemic countries have begun to track the proportion of dracunculiasis cases occurring in 1995 that have been adequately contained. These figures include 100% of the three cases discovered in India, and the one case in Cameroon so far this year, 80% of 5,474 cases in Ghana in January-March, 55% of 172 cases in Benin in January-February, 51% of 70 cases in Burkina Faso in January-March, 50% of 706 cases in Uganda in January-March, 25% of 39 cases in Ethiopia in January-March, and 16% of 122 cases in Mali in January-March. All programs should soon be tracking this information monthly.

Figure 3



THIRD MEETING OF NATIONAL PROGRAM COORDINATORS HELD AT LOME

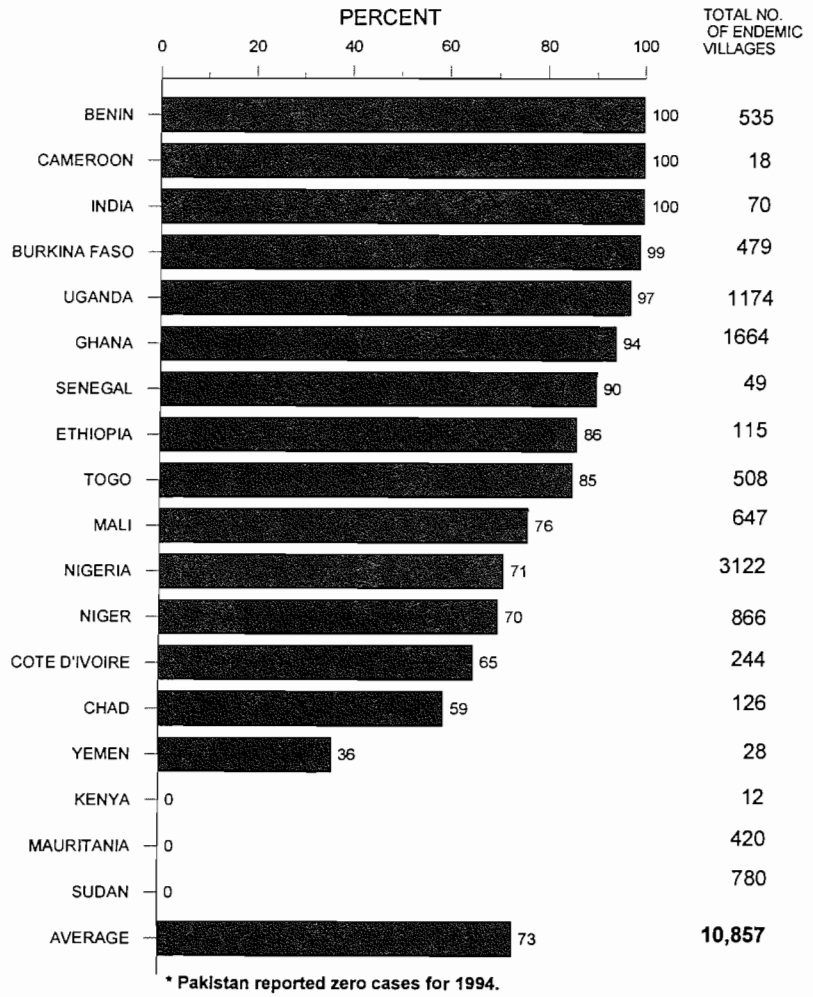
More than 100 participants attended the Third Meeting of National Program Coordinators, which was held in Lome, Togo, on April 19-21, 1995. All endemic countries were represented except Sudan and Kenya

(The Sudanese coordinator was fully engaged in the intensive activities underway during the "Guinea Worm Cease-Fire" in that country). The theme of the conference, which included brief presentations by each national program coordinator on the current status of his country's program, as well as sessions on case containment, vector control, and discussions of plans and needs for national activities during the remainder of 1995, was "Together Victory is Certain" (Ensemble la Victoire est Certaine). All national program coordinators (except as noted above) reported on the status of eradication efforts for 1994 and provided updates through April 1995.

The proportion of affected villages under case containment, reporting monthly, and under vector control are shown in Figures 3, 4, 6, and 7, respectively. The numbers of cases reported monthly in each of the affected countries during 1994 are shown in Table 1, and Table 2 shows the numbers of cases reported thus far in 1995. Figure 5 shows the decline of cases between 1987 and 1994, globally, and for selected countries. It should be noted that one-third of all 1994 cases were reported from Sudan. If cases from Sudan are excluded, a total of 111,702 cases were reported by all other countries. In Figure 6, the numbers of cases reported monthly during 1994 can be compared with those reported so far in 1995, including the average proportion of affected villages reporting cases.

Figure 4

PERCENTAGE OF VILLAGES WITH ENDEMIC DRACUNCULIASIS REPORTING CASES MONTHLY: APRIL 1995



* Pakistan reported zero cases for 1994.

Togo's minister of health, Dr. Afatsao Amedome, presided at the opening and closing ceremonies. The opening ceremony included three stirring musical interludes by a Togolese group, the "Guinea Worm Chorale" (Chorale Ver de Guinee). General Amadou Toumani Toure, former head of state of Mali and president of that country's Intersectoral Group for Guinea Worm Eradication, also addressed the opening session of the meeting. The first two meetings of national program co-ordinators were held in Brazzaville in 1991 and in Cotonou in 1993.

Figure 5 DECLINE OF DRACUNCULIASIS CASES IN SELECTED COUNTRIES 1987-1994

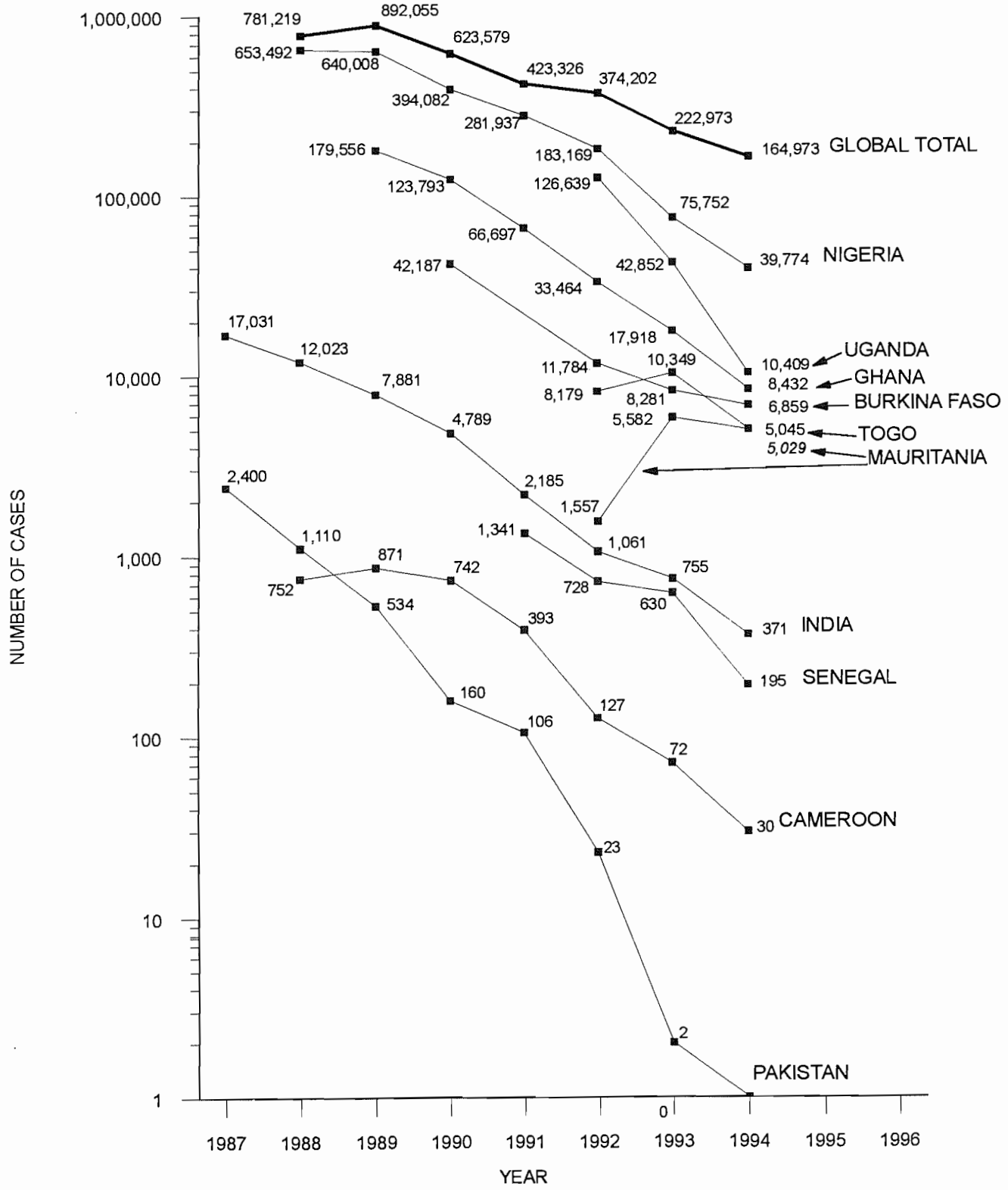


Table 1

Updated: May 2, 1995

MONTHLY REPORTING OF CASES OF DRACUNCULIASIS IN 1994
(COUNTRIES ARRANGED IN DESCENDING ORDER OF INCIDENT CASES IN 1993)

COUNTRY	NO. OF CASES IN 1993	NUMBER OF CASES REPORTED IN 1994												TOTAL 1994*	% CHANGE 93-94*
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC		
NIGERIA	75752	5433	4741	4260	3527	3615	3873	3848	2706	2153	2059	1780	1779	39774	-47
UGANDA	42852	1115	836	1141	1218	1392	1236	1028	699	524	562	378	296	10425	-76
NIGER	25346					87	715	1212	5644	4848	2933	2203	920	18562	-27
GHANA	17918	834	494	793	888	1144	706	587	304	228	410	956	1088	8432	-53
BENIN	16334	467	499	304	181	118	101	72	102	257	577	823	801	4302	-74
MALI	12011	37	153	198	294	444	787	1102	1037	748	480	185	116	5581	-54
TOGO	10349	480	423	361	224	222	238	242	249	376	729	861	639	5044	-51
BURKINA FASO	8281	103	254	118	487	531	1040	1205	1121	1194	324	356	128	6861	-17
COTE D'IVOIRE	8034	538	582	452	773	517	615	301	140	207	365	206	365	5061	-37
MAURITANIA**	5882												5029	5029	-15
SUDAN#	2984	556	2023	1321	2934	8964	16872	1002	1346	12788	756	3202	1507	53271	1685
CHAD	1231	67	17	9	2	7	254	120	51	42	69	2		640	-48
ETHIOPIA	1120	1	40	28	129	100	266	210	152	100	102	94	30	1252	12
SENEGAL	815	0	0	0	0	2	17	42	55	50	12	12	5	195	-76
INDIA	755	0	1	1	21	11	56	33	69	64	75	38	2	371	-51
CAMEROON	72	0	0	0	1	5	7	4	5	7	0	0	1	30	-58
KENYA@	35	3	20	0	0	2	6	1	0	0	5	0	0	37	6
PAKISTAN	2	0	0	0	0	0	0	0	0	0	0	0	0	0	-100
YEMEN@	0											52	54	106	??
TOTAL	229773	9634	10083	8986	10679	17161	26789	11009	13680	23586	9458	11148	12760	164973	-28

* PROVISIONAL NUMBERS.
** CUMULATIVE TOTALS
@ NATIONAL CASE SEARCH UNDERWAY.
# CASES REPORTED FROM ACTIVE AND PASSIVE SURVEILLANCE.

Table 2

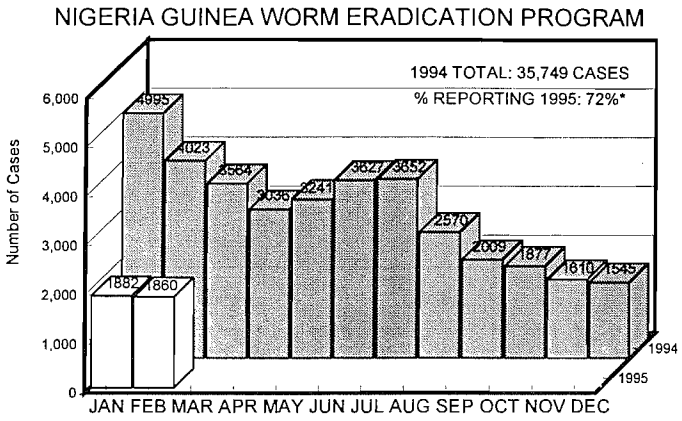
Updated: May 2, 1995

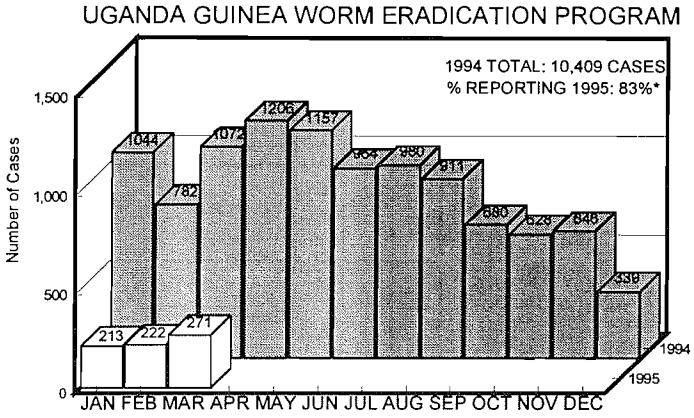
MONTHLY REPORTING OF CASES OF DRACUNCULIASIS IN 1995
(COUNTRIES ARRANGED IN DESCENDING ORDER OF INCIDENT CASES IN 1994)

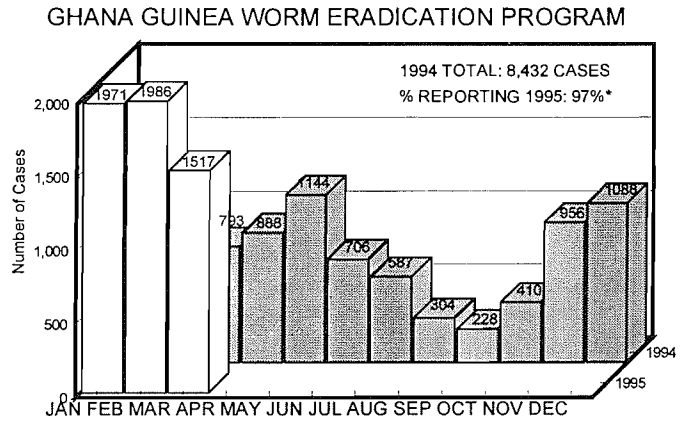
COUNTRY	NO. OF CASES IN 1994*	NUMBER OF CASES REPORTED IN 1995												TOTAL 1995*
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	
SUDAN#	53271	144	450	300										894
NIGERIA	39774	1882	1860											3742
NIGER	18562	28	45	65										138
UGANDA	10425	213	222	271										706
GHANA	8432	1971	1986	1517										5474
BURKINA FASO	6861	34	12	24										70
MALI	5581	31	36	55										122
COTE D'IVOIRE	5061	487	731											1218
TOGO	5044	337	121	61										519
MAURITANIA+	5029			36										36
BENIN	4302	434	172											606
ETHIOPIA	1252	19	8	12										39
CHAD	640	10	22	7										39
INDIA	371	0	0	2	1									3
SENEGAL	195	0	0	0										0
YEMEN	106	0	1	0	0									1
KENYA	37	0	0	0	0									0
CAMEROON	30	0	0	0	1									1
PAKISTAN	0	0	0	0										0
TOTAL	164973	5590	5666	2350	2	0	0	0	0	0	0	0	0	13608

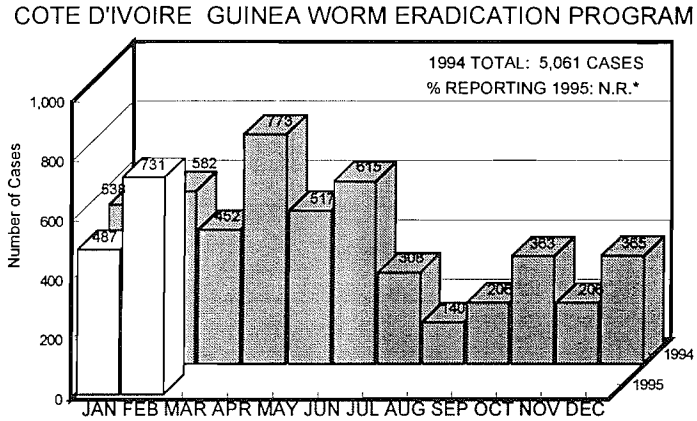
* PROVISIONAL NUMBERS. # CASES REPORTED FROM ACTIVE AND PASSIVE SURVEILLANCE. + CUMMULATIVE CASES

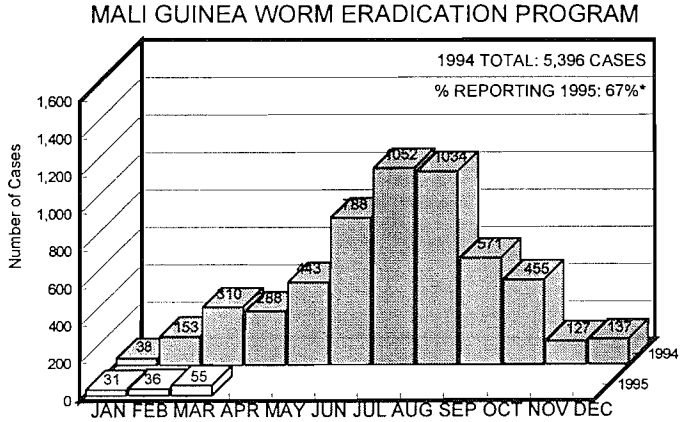
Figure 6 NUMBER OF CASES OF DRACUNCULIASIS REPORTED IN NIGERIA, UGANDA, GHANA, COTE D'IVOIRE, MALI, AND BURKINA FASO: 1994 - 1995

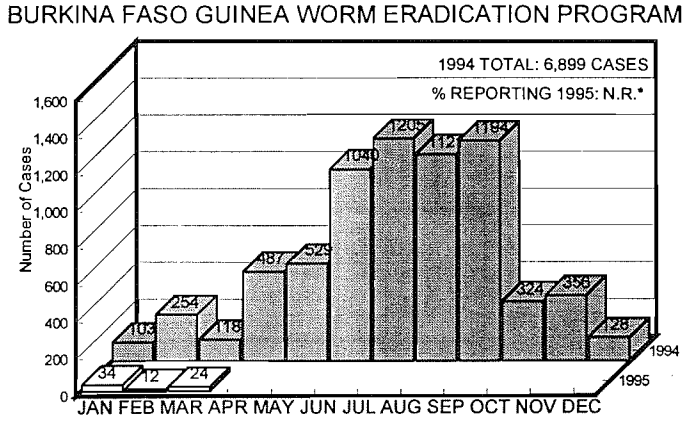






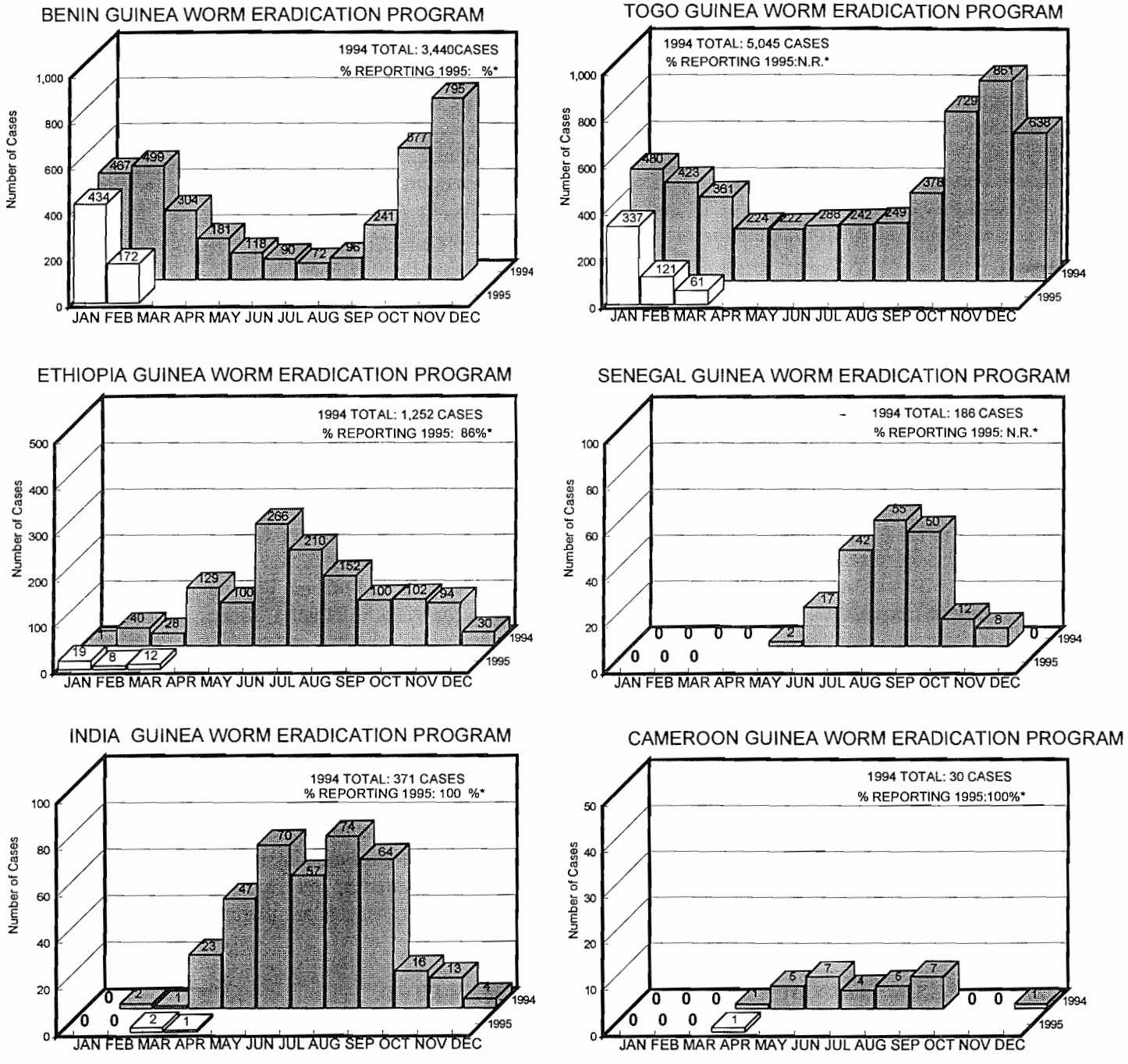






* AVERAGE PROPORTION OF VILLAGES REPORTING CASES IN 1995. N.R. NOT REPORTING.

Figure 6
(continued) NUMBER OF CASES OF DRACUNCULIASIS REPORTED IN BENIN, TOGO, ETHIOPIA, SENEGAL, INDIA, AND CAMEROON: 1994 - 1995



* AVERAGE PROPORTION OF VILLAGES REPORTING CASES IN 1995. N.R. NOT REPORTING.

NIGERIA: THE CARTERS AND NIGERIA'S FIRST LADY VISIT ENDEMIC VILLAGE

Mrs. Maryam Abacha, wife of the Nigerian head of state, joined former U.S. President Jimmy Carter and Mrs. Rosalynn Carter in a visit to Amorie village (population 3,000) in Enugu State, Nigeria, on March 22, 1995. President Carter was in Nigeria to boost the Nigerian Guinea Worm Eradication Program (NIGEP) in the final phase of its struggle to eradicate dracunculiasis. Also joining in the momentous visit to Amorie were the military administrator of Enugu State and his wife, the commissioner of health of Enugu State, the director general of the Nigerian Federal Ministry of Health, as well as the U.S. ambassador to Nigeria and his wife. The visitors saw more than two dozen persons suffering from Guinea worm, and also visited the pond which is the villagers' source of drinking water. President Carter explained to the villagers how dracunculiasis is spread and urged them to take effective measures to protect themselves and their families. The villagers conferred chieftancy titles and regalia on Mrs. Abacha and on President and Mrs. Carter. With over 10,000 cases of dracunculiasis remaining in 1994, Enugu State alone reported 25% of all the cases in Nigeria that year, and about 10% of all cases worldwide outside of Sudan.

Immediately after visiting the village, President Carter joined the meeting of national and state Guinea worm officials and commissioners of health then being held at the Nike Lake Hotel in Enugu to also mark Nigeria's National Guinea Worm Eradication Day. After delivering a moving account of the visit to Amorie, he presented the 1994 Jimmy and Rosalynn Carter Awards for Guinea Worm Eradication to Nigeria's four zonal facilitators: Professor Eka Braide, Professor Luke Edungbola, Professor Oladele Kale, and Mr. Ben Nwobi. He presented the 1995 award to Dr. Lola Sadiq, the national program coordinator.

In Nigeria, the former U.S. president also discussed the eradication campaign during other meetings in Abuja with the head of state, General Sani Abacha; the Secretary to the Federal Government, Alhaji Aminu Saleh; the directors general of the federal ministries of health and of agriculture and water resources (new federal ministers had been sworn in only the day before), and others. Dr. Donald Hopkins, Global 2000 senior consultant, accompanied President Carter in the visits to Nigeria, Kenya, and Sudan.

In January and February 1995, Nigeria for the first time has reported fewer cases of dracunculiasis than Ghana, because of the setback caused to the Ghanaian program by the ethnic fighting in the Northern Region of that country a year ago, as described in the previous issue of Guinea Worm Wrap-Up. Also contributing to the difference, however, is the fact that Ghana's reporting is more complete than Nigeria's. 1,882 and 1,160 cases were reported in Nigeria in January and February 1995, with 76% and 69% of endemic villages reporting, vs. 1,971 and 1,986 cases reported in Ghana in January and February, with 100% and 96% of endemic villages reporting. NIGEP officials have so far held three monthly meetings with their Cameroonian counterparts in 1995 to discuss issues of trans-border transmission between Borno State and the Far North Province of Cameroon. They also met with counterparts from Niger and Benin during the Lome conference; follow up meetings with the latter two countries are planned.

MALI: CASE CONTAINMENT TRAINING TO BE COMPLETED

According to a report by the national program coordinator, Dr. Issa Degoga, 22% of the 5,581 cases reported by Mali in 1994 were contained, as were 16% of the 122 cases reported so far in the first three months of 1995. Case containment was practiced in 197 villages in 1994. Formal case containment training is planned to be completed in all

endemic villages by the end of May, 1995, following a brief interruption. The surveillance reports from 1994 confirm the existence of year-round transmission of dracunculiasis in Mali, with Mopti Region being especially susceptible to transmission early in the year (Figure 6). The President of Mali's Intersectoral Group for Guinea Worm Eradication, General Amadou Toumani Toure, will tour endemic districts of Kayes Region in May.

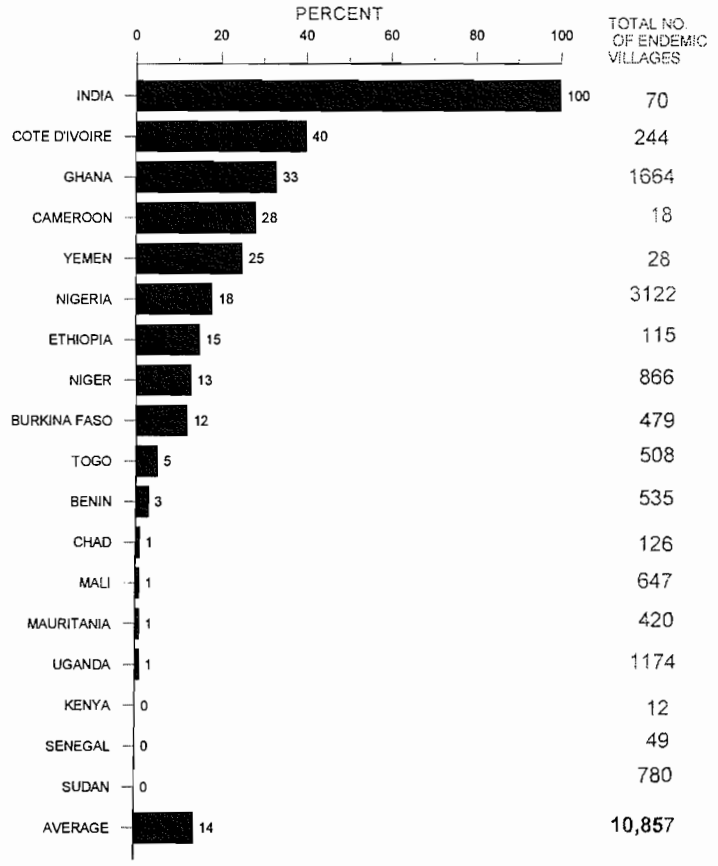
IN BRIEF

India. India's National Guinea Worm Eradication Program and the governments of the states affected by dracunculiasis celebrated "Guinea Worm Education Week" during the week of April 24-30, 1995. This week-long festival has been an annual event for the past several years, and an effective means of disseminating information about Guinea worm disease, educating children and adults about how to prevent the disease, and about eradication efforts in India.

Senegal. President Diouf sent an open letter on March 17 via the mass media to all citizens of Senegal endorsing the mid-Decade goals in Senegal, including the eradication of dracunculiasis. He plans to visit an endemic village in May, when each of the 49 endemic villages will be visited by a member of parliament.

Figure 7

PERCENTAGE OF VILLAGES WITH ENDEMIC DRACUNCULIASIS UNDER VECTOR CONTROL: APRIL 1995



* Pakistan reported zero cases for 1994.
** This intervention may not be appropriate in 100% of endemic villages.

Uganda. This year's National Guinea Worm Eradication Day will be held on June 13. It will include a conference at which the head of state is expected to speak.

Yemen. A total of 28 endemic villages have been identified in the national case search, which is now scheduled to be completed by the first week of May. Searchers have also followed up on suspected endemic areas identified in response to a question about dracunculiasis which was included on the recent national census.

RECENT PUBLICATIONS

CDC, 1995. Update: Dracunculiasis eradication - Ghana and Nigeria, 1994. Morbidity and Mortality Weekly Report, 44:189-191.

Issaka-Tinorgah A, Magnussen P, Bloch P, Yakubu A, 1994. Lack of effect of invermectin on prepatent guinea-worm: a single-blind, placebo-controlled trial. Trans Roy Soc Trop Med Hyg, 88:346-348.

Ruiz-Tiben E, Hopkins DR, Ruebush TK, Kaiser RL, 1995. Progress towards the eradication of dracunculiasis (Guinea worm disease). Emerg Inf Dis, 1(2):58-60.

WHO, 1995. Dracunculiasis. Yemen. Wkly Epidemiol Rec, 70:77-78.

DR. FERGUS McCullough

We regret to report the death, as this issue went to press, of Dr. Fergus McCullough, who was retired from the Vector Biology Control Division of WHO headquarters. He spent many years working on schistosomiasis in Kenya, Ghana, and elsewhere during a long, illustrious career. He was also a strong, early supporter of Guinea worm eradication. He was a key participant in the first international meeting on dracunculiasis eradication held in Washington, DC in 1982, and later undertook consultations on dracunculiasis in Côte d'Ivoire, Ghana, Mali, and Niger. We shall miss him greatly!

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THE BOOM BOOM GAME

(Adapted from remarks by Dr. Donald Hopkins at the closing ceremony of the Third Meeting of National Program Coordinators, in Lome, Togo on April 21, 1995.)

Since this is the last time all program coordinators will meet before the target date for eradicating dracunculiasis, it is appropriate that we should look forward and back to what we will have wrought when dracunculiasis is eradicated. I have often thought of how the national Guinea Worm Eradication Programs are similar to jet aircraft. At this stage of the campaign, with the recent "Guinea worm cease-fire" in Sudan, it is gratifying to see that all 19 airplanes are now in the air.

Already, in October 1993, the aircraft Pakistan achieved the first breakthrough by exceeding the speed of sound. The sound from that milestone, two loud booms in quick succession, could be heard all over Africa and Southwest Asia. It was so loud that all over Africa, children stopped what they were doing and asked, "Mama, what was that?" And their parents told them, "That was your brothers and sisters in Pakistan. It means they have just found, and killed, the last Guinea worm in their country."

Eventually, 19 sonic booms were heard. And the children were so impressed by this that, being children, they invented a new game, which they called "The Boom Boom Game". In this game, which could be played by any number of children of all ages, it was the duty of the oldest child present to recite the names of the 19 aircraft in the precise order in which they broke the sound barrier. After the name of each country was called, all the children would shout "Boom! Boom!" But it was the special task of every child to know when the name of his or her country would be called, since they were to shout their own country's name as loudly as they could, in unison with the oldest child. And when a child shouted his country's name at the wrong time, the others teased him. And so they learned the correct order of the countries.

After many decades, however, succeeding groups of children forgot the meaning of the game, and how it came to be. So eventually the elders of each village called their neighbors to a special meeting at dusk, during a spectacular dry season sunset. The entire village was gathered together, with the smallest children sitting in front.

Then the elders began to tell of the heroic deed of their ancestors. They told how each aircraft represented a country of that name, and of how each broke the sound barrier, with the help of many of the captain's compatriots, who sacrificed much in order to help eradicate the Guinea worm. They told anecdotes about each of the aircraft, including, for example, how the captain of the Ethiopia bent the rules by inscribing the words "Ethiopia tikdem" on the sides of his aircraft, meaning "Ethiopia first", when only the country's name was supposed to be written there. They told them of how, on their take-off roll, the captain and co-captain of the Ethiopia could be seen struggling to achieve "wheels up" sooner than any of the aircraft which had proceeded them. They told them of how, towards the end of the campaign, the aircraft Benin, Togo, Ghana, and Côte d'Ivoire were seen racing abreast, wing tip to wing tip, their captains challenging one another to see which of them would be the first to exceed the speed of sound. They told of how, after each country broke the sound barrier, that captain helped the remaining ones which had not, since all knew that until every one of the aircraft had exceeded the speed of sound, none of them could safely return to their base. The elders also told of how, when the 19 countries asked for more help, a few of the wealthier countries came to their aid: the United Arab Emirates, Saudi Arabia, Japan, Norway, Sweden, Denmark, The Netherlands, Canada, and the United States of America. They told of the generous assistance provided by three American companies: DuPont, Precision Fabrics Group, and American Cyanamid. They told of how ordinary workers like themselves, in a factory in far away West Virginia, USA, said they took extra special care on the days when their machines were weaving the nylon cloth used to make filters for the eradication campaign, since the workers knew that the smallest defect "could mean that a child in Africa might get Guinea worm." They told how young volunteers from America, Japan, France, and Germany came to Africa and worked alongside their African counterparts. And they described how some of the mechanics and technicians who were not accustomed to working on such high performance aircraft, loaded excessive equipment aboard, so that a few of the planes had to be hastily re-fitted after being unable to lift off, or after being unable to gain enough speed after they were already airborne.

The elders also told of how the loudness of each aircraft's sonic boom was directly proportional to the numbers of cases of dracunculiasis that that country had at the beginning of the campaign. So that when the Nigeria broke the sound barrier, the reverberating sound shook the earth all over Africa.

The elders told the villagers that they should speak the names of Jimmy Carter and Amadou Toumani Toure with special reverence, and why.

But still, many of the children did not understand why the elders had called this extraordinary meeting (which was quite unprecedented in the children's own young lives), and had insisted that every member of the village must be present. Then the elders brought forth some of the pictures which their predecessors had saved, from photographs, newspaper articles, and magazines of people with Guinea worms coming out of all parts of their bodies. One showed a young girl being carried to school on her brother's back, being unable to walk herself because of a Guinea worm which could be seen emerging from her foot. And the elders explained how Guinea worm was spread. Some passed around faded pieces of "Faso Fani" cloth and scraps of nylon filter cloth which had been used in the campaign. The children were amazed and surprised, since all their households had had clear, pipeborne water since long before they were born. They marveled at this thing which had been done for them by you, their ancestors. And they understood.

The elders then described how, when all of the airplanes had broken the sound barrier, in celebration of their victory they formed a close circle and flew straight up into the sky, then each turned on its back and flew away from the center of the circle, in an "exploding star" formation, before returning home. Magically, the elders said, the exploding star formation was seen all over Africa and Asia, in all the countries where Guinea worm had once occurred.

Finally, the elders asked all of the villagers to stand up. Then, in a familiar call-and-response cadence, the village chief called out the name of each aircraft, in the proper order, and the villagers all repeated the name loudly after him. And after each country's name was called, instead of the "boom boom" of the children's game, one of the elders, a different one for each country, proclaimed in a loud clear voice the name of the captain, and in some cases the names of the co-captains, of that plane. And when the children's little hearts were about to burst with pride at this marvelous accomplishment of their ancestors, then, and only then, did the elders tell them of how, at the beginning of the eradication campaign, no-one, almost no-one outside of Africa, believed that any of those aircraft would ever fly.

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In memory of BOB KAISER.

Inclusion of information in Guinea Worm Wrap-Up does not constitute "publication" of that information.

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