TWO FAMINES: THE SAHEL AND IRELAND

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Famine, the Second Horseman of the Apocalypse, has afflicted man throughout history. Famines are more frequent than many realize; for example, there has been a serious famine nearly every year since the end of World War II (Mayer 1975). The famine in the Sahel which ended last year and the Irish potato famine of the last century are two famines of significant duration and scope. Neither famine was induced or exacerbated by war or civil disturbances, so the operation of secular forces can be more clearly seen. Both are reasonably well documented, and they provide an opportunity to compare the course and effects of famine in two different cultures, with differing subsistence and economic patterns. The 120 years which separate these two famines provide a comparison of relief philosophies and organization.

**THE SAHEL 1967-74**

The term "Sahel" comes from an Arabic term meaning "borderland" or "margin", and is essentially a climatic term designating a belt of semi-arid land extending across Africa from the Atlantic coast to the borders of the modern state of the Sudan, lying between the Sahara and the savanna (Fig. 1)(Brabyn 1975). This area, some two million square miles in extent, is vaster than India and includes nearly 20% of Africa's land area (Rosenthal 1974). Rainfall within this zone normally varies from 100 to 600 mm/year, 80% to 90% of which is lost through evaporation. Relatively slight variations in rainfall can have dramatic consequences, since just a few millimeters of annual rainfall can determine whether an area is viable grazing land or part of the Sahara (Brabyn 1975).
**THE SAHEL.** Spanning the breadth of Africa, the region known as the Sahel (outlined in grey on map) is more than 30 times the size of England. The two grey patches right of map indicate areas of Ethiopia and Somalia forming part of the Sahel zone and also hit by the drought in 1973 and 1974. Countries named on map: those directly or indirectly affected by the Sahel catastrophe. Opposite page: mother and child lying exhausted on the sand—an image of the human misery inflicted by the worst drought experienced in the Sahel during this century.

*Figure 1. (Brabyn 1975)*
The famine in the Sahel considered here was precipitated by a seven year drought which persisted from the failure of the rains during the 1967-68 rainy season until the recurrence of significant rainfall in late 1974 (NY Times 23 Aug. Sep 1974). This drought was caused by a southerly shift in the "intertropical discontinuity" which defines the northern margin of the moist monsoon airstream (Ross & Bryson 1974). Droughts of great length and severity have occurred in the Sahel in the past, including a very severe drought only fifty years ago. However, the 1967-74 drought was the worst ever recorded, and broke records established in the fourteenth century (McLeod 1974, Rosenthal 1973). There is evidence that the extraordinary severity and duration of this drought may be related to a progressive world-wide cooling trend (Ross and Bryson 1974), but the mass of evidence indicates that longterm trends in world climate are only peripherally related to the severity of the famine in the Sahel.

The Sahel is peopled by two major groups. Ninety percent of the population are herders, principally Tuareg and Fulani. The remainder, concentrated in the southern, wetter, portion of the zone, are Negro peasant agriculturists. Prior to the colonial period the nomadic herders were dominant. However, the imposition of colonial government brought with it an "antipastoral outlook", a trend accelerated after independence. The colonial and post-colonial regimes have both been based on the agriculturalists, and have tended to support their interests. This hostility and enmity toward herders is an expression of the pattern of nomad-sedentary hostility frequently found in the Old World (Bugnicourt et al 1975, Sheets & Morris 1974).
The response of the herders to ecological stresses, particularly drought, was predicated on their control of their resources, especially access to wells and rangeland. The imposition of colonial control eliminated the Tuareg and Fulani ability to manipulate these resources and opened rangeland and wells to exploitation by agriculturalists. This opening of former grazing lands to agricultural exploitation both limited the land available for grazing and forced the nomads into more marginal areas closer to the Sahara proper (Brabyn 1975, MacLeod 1974).

The colonial period, in addition to ending nomad hegemony over rangeland and wells, also brought means to control disease among livestock. Since the herders retained control over only one resource, their cattle and other livestock, a maximum number of animals was essential in order to insure survival. These factors combined to generate a dramatic increase in the size of the nomads' herds (Bugnicourt et al 1975, MacLeod 1974). The digging of deep wells accelerated the increase in herd size and increased the concentration of animals on diminished areas of grazing land in proximity to deep wells (Bugnicourt et al 1975). Overgrazing was becoming common before the drought began (MacLeod 1974).

The effects of the lack of water began almost immediately after the rains failed during the winter of 1967-68. Food aid shipments were initiated in 1968. As the drought progressed crop failures became chronic. By 1971 Lake Chad had shrunk to one-third its normal size, and the Niger and Senegal rivers shrunk to shallow streams. The drying Niger sank below a record level set in the fourteenth century (Sheets & Morris 1974).
As the rains continued to fail and the grass ceased to grow, the herders began to systematically strip the land of its vegetation in order to maintain their herds. Overgrazing and trampling destroyed vegetation in the neighborhood of watering places, which became congested as shallow sources dried up. As the drought progressed, grass was exhausted and herders cut trees and bushes in order to obtain forage. These processes—overgrazing, trampling, and tree and brush cutting—resulted in permanent desertification in much of the Sahel (Bugnicourt et al 1975, MacLeod 1974, Rosenthal 1973).

Desertification in the Sahel is almost solely the result of removal of vegetation by overgrazing. This causes the removal of fine soil particles and increased water evaporation, exacerbating the dessication already present. Rainfall, when it comes, is thus less effective. Surface wind speed increases and sands blow in and cover the soil. The singular effect of overgrazing in producing desertification in the Sahel is dramatically illustrated by an Earth Resources Technology Satellite photograph taken at the height of the drought (Fig. 2). The darkened area is a 250,000 acre French-owned ranch, which is fenced and protected from overgrazing. The vegetation has not been stripped and desertification has not taken place. The control of grazing is the only difference between the ranch and the surrounding area (Brabyn 1975, MacLeod 1974).

In the struggle for survival, then, the herders destroyed their resource base. Their herds had grown beyond the land's ability to maintain during periods of drought. After the land had been stripped of vegetation, the animals began to die. They
SATELLITE'S EYE VIEW
OF DESERT RANCH

In a study on the Sahel carried out for Unesco's "Man and the Biosphere" programme, an American specialist, Norman MacLeod, stresses the value of remote-sensing techniques in drawing up a map of natural resources, carrying out surface water studies, and analyzing cropping patterns, etc. Dark-coloured polygon on photo right, taken by earth-girdling satellite on May 8, 1973, is formed by vegetation contrasting with the surrounding desert. It marks the boundaries of the "Toukounouss" ranch, established in Niger several decades ago. To maintain this greenery in the midst of an arid landscape, the ranch owner divides his land into five grazing areas, only allowing his cattle to graze on a single area each year. This "rotation" gives the grass a chance to grow in the other four areas. Wire fence surrounds the ranch.

Figure 2. (Brabyn 1975)
died not of thirst, but of starvation. The loss of livestock in the Sahel was catastrophic. In 1973 estimates of losses ranged from 33% in Niger, the lowest, to virtual extinction in Mali. As their cattle died, the Tuareg and other herding peoples began to drift into refugee camps (Brabyn 1975, Bugnicourt et al 1975, MacLeod 1974, Sheets & Morris 1974).

Casualties in this famine are difficult to estimate. The only adequate and comprehensive statistics were gathered by U. S. Public Health Service surveyors in 1973. These surveyors estimated that over 100,000 people died in the Sahel in 1972 alone. Most of these victims were children. The major killer was measles, although there was a significant increase in deaths from cholera, tuberculosis, and other diseases (Sheets & Morris 1974).

Measles in the Sahel is the same illness familiar to Americans, but in synergy with malnutrition, as was the case in the Sahel, it is not a minor inconvenience but a deadly scourge. Respiratory complications are common, but the deadliest symptom is diarrhea. This is usually the proximate cause of death when it results; if it does not kill the patient it often triggers more obvious malnutrition symptoms. Significantly, most of the photographs of children in relief camps show classic symptoms of marasmus. The effects of the measles alone are often of significant duration; the weight of children is often depressed below the pre-illness level as late as five months after clinical recovery (Mayer 1969).

Famine relief in the Sahel was an international effort, but most relief was undertaken by the United States Agency for International Development, assisted by the United Nations
Food and Agriculture Organization. The major impediment of effective relief was bureaucratic ineptitude. Political considerations also hampered the relief effort. Both of these relate to the most conspicuous failure of the relief efforts throughout the period of drought: the failure to gather, retrieve, and use information (Sheets & Morris 1974).

As Mayer (1975) notes, the most immediate problem in a famine is to obtain accurate information. Because of the failure of the relief agencies working in the Sahel to do so, almost every aspect of the relief effort was inhibited. No comprehensive or accurate intelligence on the situation in the Sahel was available to AID or FAO decision makers until 1972, although the drought was then five years old. Because of inadequate planning and lack of information regarding transportation facilities, relief food rotted on the docks in Dakar while deliveries in the Sahel fell short; an English reporter stated that the only fat animals he saw in Africa were the wharf rats in Dakar, while at the same moment people and livestock were starving in the interior. Number Two sorghum was the primary relief food item sent, which caused diarrhea and death among nomads used to a high-protein diet (Sheets & Morris 1974).

A particularly tragic aspect of this famine was the discrimination shown against nomad refugees. Both nomads and Negro agriculturists were affected by the drought, but relief for the agriculturists was usually provided in their own villages (Rosenthal 1973 & 1974, Bugnicourt et al 1975). However, discrimination against nomad refugees seems to have been uniform in the Sahelian nations; in every case evaluated,
the indicators of malnutrition and famine-induced mortality was more severe among nomads, even when nomad camps were side-by-side with agriculturist relief sites. In Niger, for example, PHS surveyors found one sedentary village receiving 4700 kilograms of grain for 400 people for a period of one month, while nomads in the same area received one bowl of milk per day (Sheets & Morris 1974). The anti-pastoralist attitude of the farmers and the Sahelian governments has apparently not ameliorated.

Beyond the human tragedy of this famine and the economic disaster it represents for the Sahelian nations, the most lasting and most severe consequence has been the damage done to the nomads' culture, especially that of the Tuareg. The cattle and livestock on which nomad society was based are gone, and the social structure has been irreparably damaged. The position of Bugnicourt et al. (1975) is that the Tuareg culture has been virtually obliterated. "The most widespread feeling is that it is going to have to find a new land for itself" (Bugnicourt et al. 1975:28). Even if this evaluation is somewhat extreme, it is apparent that Tuareg culture will only continue in an attenuated form. Only 10% of the Tuareg refugees have indicated a willingness to return to herding, even if their animals are restored (Bugnicourt et al. 1975, Rosenthal 1974). It appears that this famine has left in its wake a new oppressed urban minority in a part of the world that can ill afford the social consequences (Bugnicourt et al. 1975).
IRELAND 1845 - 1846

The most serious Irish potato famine, the "Great Hunger" of Irish folklore, was caused by a general failure of the potato crop as a result of infection by potato blight, *Phytophthora infestans*. This fungus attacks both the growing plant and the ripened tubers, killing the plant and reducing the potato tubers to a semiliquid mass, "a stinking, rotting mess" even after harvesting. The blight first appeared in Ireland in August 1845, and is still endemic there. The first infection was limited in extent and caused only local food shortages. However, 1846 was exceptionally warm and damp --- ideal conditions for blight --- and virtually the entire potato crop was destroyed (Woodham-Smith 1962).

Ireland could ill afford such a disaster. On the eve of the Great Hunger, Ireland was supporting the densest population in the Western world. Disraeli once stated that on arable land (nearly all of the land, thanks to the potato) the population of Ireland was as dense as that of China. The Census of 1841 gave a figure of greater than eight million, and the population in 1845 has been estimated to exceed nine million (Woodham-Smith 1962). The extent of this crowding can be gauged by a comparison with modern figures; the combined population of the Republic of Ireland and Ulster barely exceed four million, less than half the population of Ireland at the time of the famine (World Almanac 1975). Ireland had been undergoing an astounding growth in population since the late eighteenth century, having registered an increase of 172% between 1791 and 1841. Even considering the probable errors in the earlier census,
this growth rate was remarkable. The heaviest populations, both in absolute numbers and in density, were found in the least fertile regions, especially Mayo and the rest of Connaught. These were the very regions most singularly dependent on the potato (Woodham-Smith 1962).

The reasons for this phenomenal rise in population are not entirely clear. It was probably not due to an increase in medical knowledge or facilities or in an improvement in sanitary standards. Medical care was scanty throughout Ireland, but particularly in the West, where the highest population densities were generally found and which supported the largest rural population. There appear to be two reasons which may account for this increase. First was the low age of marriage. During this period the Irish married quite young, both sexes typically marrying in their mid- to late teens, and began producing children almost immediately. This trend was encouraged by the very poverty and low standard of living characteristic of the Celtic Irish: "They cannot be worse off than they are, and they may help each other (Woodham-Smith 1962:30)." Ireland was a subsistence agricultural economy, and as in nearly all such economies children were economic assets and insurance against indigence in old age. Furthermore, providing the potato crop was adequate, the cottier or tenant farmer did not lead an excessively miserable life, in spite of his poverty. His diet of milk and potatoes was nutritionally adequate, if hardly sound, and the lack of clothing and material possessions was ameliorated by two factors. The cultivation of the potato entailed little outdoor exposure during the winter. As a tenant or cottier, cheap and
abundant fuel was available to him in the form of turf, so his cabin was generally warm and dry (Woodham-Smith 1962).

The primary factor permitting the population to rise, however, appears to have been the cultivation of the potato. The potato became the dominant subsistence crop after the shift from grazing to tillage in the eighteenth century (Green 1957). The potato could adequately feed a family from a tiny plot: its productivity was such that on the eve of the famine only 1½ acres could provide food for a family of six for a year (Woodham-Smith 1962). The population densities this crop permitted are startling. County Mayo, one of the most infertile and remote in Ireland, supported 475 persons per square mile in 1841 (Green 1957).

The social conditions in Ireland on the eve of the Great Hunger were a result of centuries of colonial exploitation by the English. The pattern of exploitation which became manifest after the coronation of Mary Tudor was remarkably analogous to that seen in the settlement of whites in North America. Land was confiscated by the Crown from the Irish and settlers from England and later Scotland were offered land as a reward or inducement for services rendered, a process termed "planting." Cromwell's plantation even included a formal "reservation:" he intended to remove all the Irish to Connaught and cordon off the province with troops, leaving the rest of Ireland open to English settlement. These schemes all failed to a greater or lesser extent, primarily because English peasantry had no great desire to occupy Irish lands and the native Irish were a much more willing and a much cheaper source of labor. The major permanent result was the dispossession of virtually all the
native Irish from their lands and their reduction to tenant status and the creation of a class of English landlords (Hayden & Moonan 1922).

This system combined the worst aspects of feudalism with almost none of its compensations. There was no paternalism on the part of the landlords, and no sense of feudal reciprocity. The system of leasing property adopted in the eighteenth century deprived the Irish of any incentive or security. By law, any improvement to the land or property on it became the property of the landlord upon the expiration or termination of the lease, and nearly all tenants in Ireland were tenants "at will," meaning they could be evicted at the will of the landlord without compensation (Woodham-Smith 1962).

The superior virtues of potato cultivation under the circumstances is apparent. The potato required virtually no capital investment. It assured its cultivator of adequate food, and the land required little preparation to grow it. The lease system encouraged subdivision of the land; the capabilities of the potato made extremely small plots of land economically viable. In 1841 nearly half of all the land holdings greater than one acre were less than five acres.1 Typically the Irish farmer would grow potatoes for his own and his family's use, while he would pasture an animal or grow grain for a cash crop, the cash being intended primarily for his rent (Woodham-Smith 1962, Green 1957).

By 1845 the potato had become almost the sole food of fully one-third of the Irish population and was the main article of

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1This rather odd statistic is in two references, and in neither is it made entirely clear. I assume that holdings of under one acre were not considered farms by the census surveyors.
diet of a much larger number (MacArthur 1957). "The existence of the Irish people depended on the potato entirely and exclusively (Woodham-Smith 1962:31)." The potato was life itself to three classes of Irish society: the tenants who held land of one to five acres, cottiers, who lived on the land of farmers for whom they worked, and laborers who lived on land hired yearly in order to obtain a potato crop. These classes bore the brunt of every food shortage, and suffered terribly whenever the potato failed, as it did in 1800 and 1816 as well as in 1845 (MacArthur 1957). The laborers, the poorest and most destitute class, starved annually, even before the famine struck, since they were without money or potatoes during the twenty-odd weeks between potato-growing seasons (Woodham-Smith 1962).

The potato blight, then, struck an overpopulated Ireland where starvation was already an annual phenomenon and whose population largely depended on the potato for survival. The blight struck with awesome rapidity: most of the fields in Ireland were blackened by the fungus within a few days during the summer of 1846. Starvation began in earnest that winter, when the last of the food reserves maintained by the people was exhausted. The blight was not severe the following year, but starvation continued because there was no food remaining. The harvest was excellent, but so little had been planted that an insufficient crop was harvested. The hopes of the people rested on the 1848 crop, but the blight again ravaged Ireland. This continued until the 1849 potato crop had been harvested (Woodham-Smith 1962).

Casualties of the Great Hunger are not precisely known, but estimates have been made using the figures obtained by the Census
of 1851. The population of Ireland declined by 2½ million between 1841 and 1851, allowing for a projection of natural increase during the period which could have been expected without the intervention of famine. Roughly one million persons emigrated during this period, primarily as a direct result of the famine. It can thus be assumed that approximately one million Irish died as a result of the potato famine (Woodham-Smith 1962). The major cause of death was typhus and relapsing fever (MacArthur 1957).

Both typhus and relapsing fever are endemic to Ireland. Both are lice-borne diseases. The hardships and misery engendered by the famine caused a marked reduction in sanitary standards, as clothing was pawned to buy food and as survival came to take precedence over cleanliness. Populations massed, as destitution increased, around food-distribution sites such as soup kitchens and workhouses and as evicted tenants clustered in the houses of friends and relatives. The major epidemics began in September 1848, the beginning of a particularly and unusually harsh winter in Ireland. At this point in the famine, work on the public roads was a major source of relief, which entailed exposure to the unusually harsh winter weather in spite of the debilitation caused by hunger and inadequate clothing. These factors caused a general increase in lice infestation and susceptibility, igniting nationwide epidemics which continued in parts of Ireland as late as 1851 (MacArthur 1957).

Relief in Ireland was handled as an internal matter by the English government, since Ireland was then part of Great Britain. By both the standards of the times and by contemporary experience, given the experience of relief in the Sahel, the relief effort was
well-administered, although there was a remarkable reluctance to accept the severity of the famine. There was some evidence of bureaucratic ineptitude, but the major impediment to effective relief in Ireland was a remarkable devotion to the principles of laissez-faire capitalism. The most dramatic evidence of this devotion was provided during 1848, the worst year of the famine. During that year food was sold from government relief stocks at a price 5% above that sold through private merchants in order to protect private profits, even though people were starving not because food was not available but because its price was beyond their means. Consistent with this ideological orientation, relief was administered through two major programs: workhouses established by the Poor Law and public works programs administered by the Board of Works. As the casualty figures attest, neither was especially effective, and these programs often exacerbated the suffering already present. For example, the workhouses were financed through local taxes. As destitution increased and the costs of administering workhouses rose, taxation increased as the ability of tenants and cottiers to pay them dissipated. This caused evictions, increasing the number of destitute without increasing collections. Opportunities to work on the public works projects was largely restricted to able-bodied men. Work was on a piece-work basis, and the workers were often so weakened by hunger they could earn little. Neither system regularly assisted the young or infirm: in some cases, young and infirm inmates of the workhouses were ejected in order to make room for the able-bodied destitute (Woodham-Smith 1962). In spite of these limitations, substantial numbers of people received food distributed through government channels. On balance, however, relief conducted in accordance with the principles of
laissez-faire was a miserable failure (Mayer 1975).

Beyond the reduction in the Irish population through emigration and death, the most lasting effects of the Great Hunger were the changes it wrought in the structure of the rural population and the foundations that were laid for the great colonies of overseas Irish. The laboring and cottier classes were virtually eliminated by the famine, and the forces which were released as a result of the famine caused the later decline of the small landholder. The great bodies of Irish immigrants in North America have had profound impacts on the course of Irish history and Anglo-Irish relationships. Even more significant, perhaps, was the legacy of hatred the famine left behind. "Between Ireland and England the memory of what was done and endured has lain like a sword (Woodham-Smith 1962: 412)," and the death and suffering which persists today, in Ulster and even in England itself, is at least in part a legacy of this famine (Edwards & Williams 1957, Woodham-Smith 1962).
In spite of obvious differences in total mortality, culture, and particular environmental stresses, a number of parallels are evident in these two human catastrophes. Most clearly, both famines resulted from quantitatively unusually severe stresses on human ecological systems which had lost their resilience to such stresses because of overpopulation. Drought was as common in the Sahel as potato failures were in Ireland: the factor producing severe famine was not the introduction of qualitatively new stresses, it was the loss of the land's capacity to absorb significant stress, given the extant subsistence patterns. The overpopulation in the Sahel was of livestock; in Ireland there was an overpopulation of human beings. In both cases, the land was not capable of withstanding ecological stress.

Both famines caused large-scale social disruptions whose effects were enduring well beyond the end of the crises. In the Sahel the Tuareg nation has been virtually obliterated and all nomad groups have suffered greatly. In Ireland three major social classes have disappeared. Although an evaluation of the Sahel cannot be made with certainty, it appears that both famines have left an enduring legacy of bitterness with the peoples who have starved and whose consequences have been the most persistent effect of the famine, insofar as Ireland is a valid example.

Finally, both famines have created a new and stable ecological balance. The elimination of the nomads' herds in the Sahel may reverse the desertification of the region, which has been its major threat for decades. At the very least it has been halted and the removal of the nomads' cultures may permit the introduction of a less destructive and more stable herding economy (Brabyn 1975).
The reduction of the population of Ireland was its most obvious and pressing need, and its need for a restructuring of its social and agricultural systems was scarcely less so. In view of the times and the strong aversion to emigration characteristic of the Irish before the famine (Woodham-Smith 1962), neither of these may have been possible by a less catastrophic means.

It is difficult to make generalizations about relief efforts from these two famines, since neither was particularly successful, at least in preventing death or social disruption. One observation might be made, however. Both Mayer (1975) and Sheets and Morris (1974) suggest that a supranational apparatus be created to more adequately deal with famine. The experience of the Sahel shows that bureaucratic ineptitude is as effective as ideological preoccupations in impeding adequate and timely response to famine. The FAO is a supranational organization, and it functioned little better than AID in coming to grips with the Sahelian disaster, even in its more circumscribed role. While the suggestion is laudable, the creation of such an agency will by no means insure that experiences such as those examined here will not be repeated unless some means is incorporated into such an organization to obviate bureaucratic ineptitude.
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