In the late twentieth century, we are accustomed to photographs of starving children, bellies distended, accompanied by tales of famine from around the globe. We accept the explanations of commentators—that famine is caused not by insufficient production, but by a breakdown in distribution, often a deliberate tool of government strongmen attempting to obtain or maintain political power by demonstrating their control over the essence of life itself. Historical famines, on the other hand, have traditionally been seen in Malthusian terms as the obvious effects of overpopulation combined with inefficient farming methods, brought to a head by the happenstance of several years of bad weather following one upon the other.

William Chester Jordan of Princeton University brings to his study of the Great Famine of the fourteenth century a many-faceted lens which reveals a complexity rivaling that of the famines of our own times. Diminution of the food supply was not limited to a drop in grain production, but extended to epidemics in herds and flocks and an acute drop in the supply of salt needed to cure meats and fish that might have supplemented the reduced supply of grain. Wars diverted resources to military needs that might otherwise have been used to feed the hungry. A century of benign weather had lulled individuals and communities into a state of unreadiness for such an extended drop in production.

Jordan's description of the mechanism of famine is fascinating. Seven years of rainy summers and cold winters brought one disaster on top of another. Foremost, of course, was low productivity in grain crops. Jordan argues that, already in the late thirteenth century, yields in the colder parts of northern Europe and on "marginal" lands were as low as 2:1 (2 bushels for each bushel sown) and probably nowhere higher than about 7:1. Some studies for individual manors show these already low harvests reduced by as much as fifty per cent in 1316 and 1317. Production of wine in France was down by as much as eighty per cent in these years.

The crops that did grow were not of the same quality as in previous years. The rain leached nitrates from the soil, leaving plants susceptible to
disease, particularly to rusts, smuts, mildews, and molds. In better times, the small number of plants affected by these diseases would have been thrown away. In the early fourteenth century, hunger drove people to eat them. Eating the diseased plants led to illness and “irrationality”. Although Jordan does not mention her work, Mary Killbourne Matossian, in *Poisons of the Past* (New Haven, Conn., 1989), explains in detail how mycotoxins found in plants infested with mold and fungi can cause suppression of the immune system and mental disturbances (Lysergic acid, a component of LSD, is a basic alkaloid of ergot, the commonest form of fungal poisoning).

The rain and cold created a parallel crisis in flocks and herds. Sheep, cows, and oxen died in unprecedented numbers from various diseases. Meat that might have substituted for the reduced grain supply was thus not available. Lack of manure further reduced the fertility of the soil. The loss of oxen reduced the amount of land which could be plowed. No wonder people thought that God’s wrath had descended on them! They seemed besieged on every side.

In Flanders, unlike the rest of northern Europe, nearly half the population was urban. Nearly all were dependent on the wool industry. The sudden and drastic decrease in the supply of wool caused a tremendous economic upheaval in Flanders, and a higher death rate than in the rest of the affected area.

Heavy rains and cloudy skies also curtailed the production of salt. In England, France, and Flanders, most salt came from evaporation of sea water, which was trapped between high tides in shallow, fire-hardened depressions of sand and clay. On overcast, rainy days, the sun alone could not effect evaporation before the next tide brought a new supply of brine. Stoking fires along the sides of the salt pan quickened evaporation, but this technique was largely ineffective in the drenching rains of the famine years. As an alternative, brine from the sea was boiled in shallow metal pans, but this method was fuel intensive and caused a sharp rise in salt prices. Thus, meat and fish, even where it was available, could not be preserved in their usual quantities and could not be relied on to replace calories lost because of the reduced grain supply.

Medieval people were accustomed to the vagaries of weather and resultant poor harvests. No town or manor was without some infrastructure for storing excess grain from bountiful harvests in anticipation of the occasional bad one. But Jordan supplies evidence that the thirteenth century had been an extended period of balmy weather and relative plenty. Barns and drying ovens were too few and too small to store grain to last through more than one bad harvest. Indeed, Europe weathered the crisis of 1315 relatively well. It was the continued bad harvests of 1316 and 1317 which brought widespread death and disaster.

War played its part in exacerbating the situation. In Norway, Denmark, and Sweden, dynastic struggles kept the north country in constant turmoil until 1319. German-speaking towns on the southern rim of the Baltic feared the military might of their northern neighbors. Military activities such as castle-building used scarce resources which might have been used to feed the hungry. English and Scottish troops devastated fields on both sides of their border as well as in Ireland, where the Scots tried to enlist Irish support for their war against England. The French king, Louis X, who was trying to bring Flanders under his suzerainty, diverted grain supplies to his troops and tried to prevent exports of grain to both the Flemish and the English.

Jordan’s analysis of the economic effects of the famine is far too nuanced to allow even an attempt at a summary here. Townspeople suffered more, and for a longer time, than those in the countryside. The very rich got richer. The fatal animal diseases were selective; they did not affect horses and pigs. Areas ploughed primarily with horses were thus less affected than those which
used oxen. Interior areas, where the salt supply came from brine springs or wells, did not suffer the drastic rise in salt prices of the coastal areas.

In his exposition of the famine itself, its mechanisms, and its economic effects, Jordan's scholarship is impeccable and his analysis both sweeping and clear. When he turns to the social effects, he whets our appetites only to leave them unsatisfied. People assumed that the famine was God's punishment for sin. They turned to prayers, almsgiving, and processions to appease His wrath. Bakers sold bread filled with disgusting ingredients—"the dregs of wine, pig droppings, and sever-al other things" (p. 162). Thievery increased. Heresy and "irrationality" bordered on revolution. Bread riots brought violence within and between social classes. All of this in ten pages. Perhaps a real history of the social effects of the famine will be Jordan's next book.

Jordan's evidence is necessarily sketchy and uneven, given the spottiness of fiscal records for the period. To make his story as complete as possible, he leaves few stones unturned, combining studies of skeletons, tree-ring-growth, and analyses of infrastructure with accounts in chronicles and records of taxes, rents, and the admission of new burghers to town institutions. In order to give an overview of the famine on a grand scale—across northern Europe, in towns and cities, and in the countryside—Jordan must rely on secondary sources. He does this with care, closely critiquing both the arguments and the evidence of his sources. For instance, in citing the 1896 work of W. Naude on English imports of grain from the Baltic (Die getreidehandelspolitik der europaischen Staaten vom 13. bis zum 18. Jahrhundert, als Einleitung in dei preussische Getreidehandelspoliti-k, vol. 1, Berlin), Jordan warns that "Naude ... cited in his support a manuscript that I have not been able to verify" (p. 179). His bibliography is impressive. Neither political boundaries nor languages hem him in. It is annoying that complete bibliographic information for primary sources in manuscript form is found only in the notes. The index is extensive and helpful.

Jordan's book is gracefully written. Much of his information is conveyed in numbers: dates, grain yields, weather data, prices. He bounces around from an account of a chronicler in Yorkshire to mortality figures for Ypres. Yet the book engages the reader because Jordan cares about these people. He never loses sight of the hungry people at the heart of his story. Their movements become slow, their voices still. Their skin grows pale. Lacking their usual food, they give themselves over to "strange diets" (pp. 115-16). They graze like cattle. And, eventually, they are buried in mass graves without benefit of the rites of the Church.

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