Some reasons to hope

by GWYNNE DYER

You don't feel like reading about the Plague today? Good. I don't feel like writing about it again either. So here's some reasons to hope, none of which are even remotely related to the coronavirus.

First, they have found not one but three new ways to combat malaria, just as the problem of growing resistance to existing drugs and insecticides was getting out of hand.

In Burkina Faso, collaboration last year between the local Institut de Recherche en Sciences de la Santé and the University of Maryland showed the effectiveness of modifying a fungus that normally infests mosquitoes. The fungus was genetically engineered to produce lethal spider toxin, and 99% of the mosquito population in the trial area died within 45 days.

Scientists at the Kenya Medical Research Institute have found that an existing drug, Ivermectin, which is used against parasitical diseases like river blindness and elephantiasis, is also effective against malaria. It kills both the plasmodium falciparum parasite in your blood and the mosquito whose bite put it there. (But you'll still get bitten first ? try hanging chicken feathers on the porch.)

And best of all, a cure that doesn't kill the mosquitoes, who are an important source of food for many bird species. The International Centre of Insect Physiology and Ecology in Nairobi has discovered that around 5% of the mosquito population on the shores of Lake Victoria in Kenya carries a microbe called Microsporidia MB that completely blocks the plasmodium parasite.

The microbe lives in the mosquitoes' gut and genitals without doing them any harm, and mothers pass it on to most of their offspring. So if you could spread that microbe to the rest of the mosquito population....

Second piece of happy news: researchers at the University of Groningen in the Netherlands are having some success in blocking the growth of bacterial resistance to antibiotics. This is the most urgent medical issue of our time, because if the antibiotics don't work then the old infections that they have long suppressed will come back and make even the simplest operation life-threatening.

Bacteria share and spread their resistance by swapping genes, and to do that they secrete a protein called CSP. The Groningen team worked through more than 1,300 existing drugs, and found 46 candidates that disrupt the ability of the bacteria to produce CSP. It's a first step, but a very promising one.

And now for something completely different. Environmentalists hate plastics because half of the megatons produced each year ends up in landfills or the oceans. However, plastic is a strong, lightweight material that is very useful in many different roles. The trick is to recycle it all properly, so it doesn't end up damaging the environment.

Enter a French start-up company called Carbios, which began by screening 100,000 micro-organisms for promising candidates that could decompose plastics quickly and cheaply into chemical building blocks that can be recycled into new plastics. They found what they were seeking in a leaf compost heap: a bacteria that produces an enzyme that will do that job.

It took a little work to mutate the enzyme so that it enthusiastically consumes the PET plastic from which plastic bottles are made. Carbios predicts that it will be operating at an industrial scale by 2024 ? and in March German researchers found a different bacteria that will eat up polyurethane.

Now for the big one. There is a company called Solar Foods, in Helsinki, which is growing bacteria (just add hydrogen) to make an organic soup from which you can make flour. Tweak the bacterial formula a bit and you can create the right proteins and fats for lab-grown meat, fish, milk and eggs.

There are many other companies just a bit behind Solar Foods (which will open its first commercial factory next year). The prospect glimmering on the horizon is that we might be able to feed the world from a relatively small amount of land, and give the rest back to nature.

What all this tells us is that there are many clever people working on all the problems that threaten our future, and that for some of them at least, solutions will arrive in time. It is still heroically optimistic to believe that all of them will, or even enough of them. There is hope, but there is also great danger.