

Corrections and comments on text from Bill Broad

Matthew Meselson

June 12, 2001

Dear Bill,

You graciously asked for criticisms and corrections. I know that in the interest of accuracy and fairness you would want me to be forthright.

insert 10d, page 1: "...*dueling visionaries...*"

"Dueling" is picturesque but not how I see it nor how I think Josh sees it. Ask him. "Political, moral, and legal ones" would be more accurate than just "political".

insert 10d, page 2: "...*charismatic scientists such as Wouter Basson...*"

Mistaken attribution to me. Basson is hardly charismatic, hardly a scientist. I met him in Ghent in the 1980s and was entirely unimpressed. What I do worry about is that the highly vocal US emphasis on protecting itself, in contrast to President Nixon's wise emphasis on protecting "mankind", could inspire not only terrorists, as you say, but also states. Other governments hearing our fevered public statements may be inspired to embark on BW programs, either defensive ones that drift into offensive ones or determinedly offensive ones to take advantage of our foolishly self-advertized vulnerability.

insert 10d, page 2: "...*party to six treaties...*"

There are seven.

insert 10d, page 3: "...*fears that the new biology would make biological warfare more dangerous.*"

Just the opposite. I have consistently written and said that an attempt to make "superbugs" would probably slow down a BW program, since the already weaponized agents (anthrax, tularemia, plague, etc) had all the properties necessary to achieve horrendous results. The point about future biotechnology is a different one-- namely that drift away from the norm of no use of biology for hostile purposes, with the long-term potential of biology to manipulate all of the life-processes, runs the risk of twisting the whole future course of civilization into an inimical channel where not only killing but subjugation and the dehumanization of both perpetrators and victims would result.

page 115: *“In 1963, the Kennedy administration...” “...Meselson quickly tired of nuclear issues...”*

The invitation was to work at the US Arms Control and Disarmament Administration in Washington throughout the summer of 1963. Six academics came. I shared an office with the physicist Freeman Dyson, from whom I learned much. We have remained in occasional contact ever since.

It is incorrect to say that I “tired of nuclear issues”. I was initially assigned to work on nuclear issues. I found the subject fascinating, but after a week or so I realized that I could add little or nothing to the already advanced study of the subject. So I asked to be reassigned to biological weapons problems. No one was working in that area at ACDA and it seemed not to have received any serious arms control study anywhere in the USG.

page 115A: *“Meselson then asked the CIA if non-nuclear nations appeared to be developing biological arms.”*

This was not at Detrick but rather at the CIA. I did not ask specifically about non-nuclear nations. I recall that the analysts I spoke with had suspicions about certain places in the USSR but no hard evidence. I recall nothing being said about non-nuclear nations.

page 132: *“At an airport...”*

It was Logan Field, Boston’s airport.

page 134: *“Abruptly, on November 25, 1969, Nixon ended it all...”*

Not so. There was a long and detailed review process, as is well known. Of course the actual decision was announced on a single definite day—how else? What you mean is not “abruptly” but rather “decisively” or “categorically” or some such.

page 134: *“With the stroke of a pen, he renounced...”*

It is important to state accurately just what Nixon renounced. He did not renounce decades of anything that was in the past. What would that even mean? What he said was “The United States will not engage in the development, procurement or stockpiling of biological weapons. We shall restrict our biological program to research for defensive purposes, strictly defined—such as techniques of immunization, safety measures and the control

and prevention of disease.”( New York Times, February 19, 1970, page 25M) Bill, as so many writers today depend on secondary materials instead of checking original sources, please make your book really exact regarding this essential US policy, lest it be eroded by misunderstanding.

page 189: *“Meselson threw the baby out with the bath water...He told the CIA that he favored the theory of tainted meat...”*

This is false and offensive in its implication that I unprofessionally rushed to judgement in consulting for the CIA. You misrepresent the written and published record from that time. I questioned every hypothesis, including the meat hypothesis. Contrary to what you state, I emphatically did not reject an aerosol release as a possibility. My thinking at the time is reflected in my own detailed notes of April 1980 and in two publications, one from the Congressional Record, the other a NYT article by Les Gelb:

“It puzzles me that new cases are said to have appeared steadily over a period of more than a month. If this was an airborne incident as alleged, the primary cloud of spores would have passed by and dispersed quickly, like smoke. Only a small fraction should be deposited on the ground and of that only a tiny fraction can become airborne again. Even that will be made up mainly of particles too large to reach the depth of the lungs where infection can occur; so, as each day passes, the dose should drop precipitously. I do not understand since the incubation period, if only a few days, and human contagion is not known to occur with respiratory anthrax, I do not understand how there could be continuing cases every day for a month or more, of approximately equal frequency, if it was respiratory anthrax. It sounds like the source of infection was continuous, not like an aerosol cloud.

So, there are a lot of questions about that in my mind. On the other hand, I cannot understand the Soviet explanation, which is that it was intestinal anthrax, caused by infected meat, if indeed there was widespread respiratory disease. The accurate diagnosis of respiratory anthrax is a key question. It is to be hoped that the Soviets will provide more information than they have so far. In a matter of this degree of importance and where a treaty obligation is involved, we have every right to seek more information from

them."

**Statement of Matthew Meselson at hearing: Strategic Implications of Chemical and Biological Warfare, Subcommittees on International Security and Scientific Affairs and Asian and Pacific Affairs, Committee on Foreign Relations, U.S. House of Representatives, 24 April 1980.**

**"The judgement of the working group – the explanation the C.I.A. still sticks with – has two chapters. Initially, it holds, there was an explosion at the factory in Sverdlovsk, causing a sudden huge release of virulent spores being used for the development of biological weapons. The quantity released was enough to cause a number of deaths from pulmonary anthrax. After the explosion and the initial wave of pulmonary anthrax cases, the C.I.A. believes, the long-lived spores settled to the ground, where they were eaten by cattle, and the meat from these infected animals was sold on the black market. Then, theoretically, there was a second wave of anthrax – filling out the six weeks.**

**There is one important fact that this theory has never been able to resolve: None of the witnesses reported even a single case of intestinal anthrax."**

**Leslie H. Gelb "Keeping an Eye on Russia"  
New York Times Magazine  
November 29, 1981**

**Background: I participated in the USG consideration of the Sverdlovsk outbreak as a full-time consultant to the C.I.A. in Langley, staying at the home of the relevant analyst for several days during the early spring of 1980. The Sverdlovsk working group, which included leading US authorities on anthrax, had information that the outbreak lasted for about six weeks, with new cases coming in nearly every day for much of that time. Standard texts we had gave the incubation period for human inhalation anthrax as a range of only a few days. An example is *Infectious Diseases: Epidemiology and Clinical Practice*, by the British anthrax authority A.B. Christie (Churchill Livingstone 1980). Even in the 1994 edition of Hoepfich, Jordan and Ronald's "Infectious Diseases", Phil Brachman states in his chapter on anthrax (page 1007) that "Persons exposed to B. anthracis should be placed**

under surveillance for 7 days, the maximum expected incubation period of anthrax". The working group was therefore truly puzzled by the long duration reported in our information from Sverdlovsk. Some members of the group initially thought that reaerosolization of deposited spores could give rise to a protracted respiratory epidemic. I knew this to be highly unlikely and I briefed the group to this effect. The unlikelihood of aerosol resuspension eventually was agreed and instead the group settled on an explanation of the long duration of the outbreak as the result of initial inhalation cases followed later by an epizootic, followed by human ingestion of the tainted meat. This was described by Leslie Gelb, in his 1981 account of deliberations within the working group quoted above.

I found the above CIA hypothesis problematic for the reason Gelb implies: it required a substantial number of intestinal cases, when no intestinal cases at all were reported by the "witnesses". This dog that did not bark seemed a serious difficulty, as it raised the possibility that the CIA's informants could not reliably distinguish the respiratory from the gastrointestinal route of entry. In that case, their statements would be non-evidentiary.

page 190: *"A laboratory found traces of what were believed to be mycotoxins..."*  
It would be more correct to say that "A laboratory reported..." Otherwise you are asserting that the report of this non-governmental contractor laboratory was correct, a matter on which there is now much doubt. The US Army lab at Edgewood never found trichothecene toxins in any of the more than 200 samples it analyzed, nor did Porton in the approximately 50 samples it analyzed. Both the Army and Porton used procedures and instruments of high specificity, able to avoid false positives. The non-governmental laboratory did not. There is a Defense Intelligence Agency document that states that the laboratory in question analyzed and reported to the USG many more samples than the USG ever made public and that many were false positives-- control samples that the contractor lab reported positive. The implication is that someone in the USG may have suppressed the false positive reports before passing the data up to higher levels of the government.

page 190: "...or be distilled..."

Trichothecene mycotoxins cannot be distilled. You mean "extracted".

page 191: "*Meselson, increasingly upset with what he viewed as intelligence abuses, led the charge against the White House.*" "...he advanced an alternate theory...". You should at least say "Meselson and his colleagues". The hypothesis that the alleged agent was the feces of the honeybee *Apis dorsata* was in fact proposed by Yale zoology professor and bee expert Thomas Seely. The detailed pollen analysis we published in *Nature* that helped prove it was done by palynologist Dr. Joan Nowicke at the Smithsonian Institution, which subsequently put on an exhibit of her work on yellow rain. In Thailand, Seeley and I joined up with Thai bee expert Professor Pongthep Akkratanakul and discovered that showers of bee feces are commonplace and yet seldom recognized by people there for what they are. The point is that I did not work alone but assembled a team of highly qualified experts (including also tropical botanist Peter Ashton, anthropologist Jeanne Guillemin, and CBW expert Julian Robinson). We did the research as a team. You disparagingly make it sound as if I am some sort of lone iconoclast and fail to convey the serious and extensive nature of the research we conducted before reaching any conclusion.

page 191: "*The mycotoxins detected in the samples were naturally occurring, from a shower of bee feces.*"

On the contrary, the conclusion we finally reached was that the reports of mycotoxins made public by the USG were false positives, as explained above and stated in our summary article in *Foreign Policy*. It is a separate matter that we disputed the initial USG claim that trichothecenes do not occur naturally in southeast Asia. Porton and Agriculture Canada subsequently reported the toxins at low levels in grain and blood samples from Thailand unrelated to the yellow rain allegations.

page 192: "*Intelligence officials privately grumbled that Meselson was fighting to save his own reputation.*"

This is perpetuation of slander by anonymous attribution.

page 233: "...*Meselson demanded that Moscow allow an independent team...*"

Demanded? In letters and verbally, I sought permission from Soviet and later Russian officials to allow independent scientists to investigate on-site in Sverdlovsk. I would be glad to provide you with copies of my considerable correspondence to this effect. I consistently argued that such openness was

needed to settle the matter. But “demanded” was never my style. Incidentally, the individuals who I invited and who agreed to make up the first three teams, when in 1983, 1986, and 1988 we had initially positive, but ultimately countermanded or disingenuous responses to requests to go to Sverdlovsk, were Doty, Baltimore and Lederberg (1983); Lou Thomas, Shelokov and others (1986); and Albrink, Brachman, Crumrine (Detrick), Guillemin, Kaufman (CDC), Langmuir and Shelokov (1988). Only after Yeltsin came in did we finally make it.

page 233: “...*National Academy of Sciences in Washington.*” “*Sitting in the audience...*”

For completeness, you should add the American Academy of Arts and Sciences in Cambridge MA. Actually, on that occasion, Josh Lederberg was not in the audience but rather was on the platform with the panel of four Americans who I invited to comment on the Russian presentations. Brachman may have been on the panel in Washington. I have videotapes of the sessions.

page 234: “*The scientific doubters as well as the government’s intelligence analysts, many of them graduates of less prestigious schools were at a disadvantage against Meselson, who used his credentials and energy to dominate the debate...*”

False. In 1988, at each of the three (not two) meetings (Washington, Baltimore, and Cambridge), I specifically invited a panel of distinguished American specialists to sit at a table on stage and comment on the Russian presentations, which they did. These individuals included some of the most eminent US experts in the field: Alexander Langmuir, James Steele, Joshua Lederberg, Philip Brachman, Wilhelm Albrink, and Edward Kass, all with the highest “credentials”. During these sessions I acted almost entirely as introducer, not discussant. In addition, I invited all of the interested CIA, DIA, Detrick and other DoD people I knew, plus a BW expert from Porton. The whole idea was to take advantage of the opportunity to get the Russian story out in detail and then to critique it.

page 235: “ ‘*The burden of the evidence*’, he told a congressional hearing in May 1989, ‘is that the anthrax outbreak was the result of a failure to keep anthrax-infected animals off the civilian meat market’ ”.

Inaccurate and misleading. An essential qualifier has been left out of this quotation. What I said and what the hearing transcript states is “The burden of the evidence available is that the anthrax outbreak...” Also, as appears on the same page of the hearing transcript, I said “The next step, it seems to me, in clarifying this issue, is to visit that facility (*i.e.* in Sverdlovsk), and I hope that is underway in discussions between the United States and the Soviet Union.” The omission of the word “available” and the omission of my reference to the need for on-site investigation leave a distorted and pejorative impression of my views at the time.

page 235: “... ‘*new information and new interpretations*’, mainly his own.”

False and pejorative. At that time (1989) the only new information and interpretations were not mine but rather those from the Soviet physicians who came to the US.

page 235: “ ‘*No nation,*’ he testified ‘*possesses a stockpile of biological or toxin weapons*’ ”.

Misleading. The full passage is “Today, to the best of my knowledge, no nation possesses a stockpile of biological or toxin weapons.” By partial quotation of what I actually said, even though the text conveys the caveat outside of the quotation, it conveys the slanderous implication of unprofessional looseness of expression.

page 351A: “*The Harvard biologist had investigated the Sverdlovsk epidemic for more than a decade and defended Moscow much of that time.*”

Inaccurate and pejorative. Precisely because any valid investigation required on-site investigation by independent experts, I repeatedly pressed both privately and in print for the Soviet Union to subject its version of events to outside scrutiny. Here are some examples:

“On the Soviet side there needs to be a political decision to allow qualified US officials freely to examine what remains of the relevant evidence and to meet with surviving patients and local medical, public health, and veterinary personnel in Sverdlovsk.

**In addition, US experts should be invited to visit, on a reciprocal basis, the facility described in its allegations. This apparently corresponds to the Sverdlovsk military epidemiology center declared by the Soviet Union..."**

**M. Meselson, M.M. Kaplan & M.A. Mokulsky  
in *Verification: Monitoring Disarmament*  
Westview Press, Boulder and London, 1990**

**"In the late 1960s, the U.S. government had reason to believe that [the facility] was developing biological weapons, and to this day the Soviets have not let us go look. This is up to them to do, the ball is in their court. It could well be that it was never doing anything illegal, but the only way the world is going to know about that, at least what it is doing now—possibly we'll never know what it used to do—is to be invited to go look. And only the Russians can invite us..."**

**A Conversation with Matthew Meselson  
*Harvard University Gazette*  
vol 86, pp 5-6, March 8, 1991**

**"These grave allegations concerning facilities at Sverdlovsk and elsewhere have been repeated year after year right up to the present time. Nevertheless, there appears to be little current activity aimed at achieving a resolution of the allegations. In particular, although the Soviet Union initiated the process by which Soviet physicians have provided additional information regarding the Sverdlovsk epidemic, requests by outsiders to visit Sverdlovsk to examine what remains of the relevant evidence regarding the epidemic and to meet surviving patients and local medical, public health and veterinary personnel have not been granted. Neither does there seem to be any movement toward inviting US or other foreign visitors to examine any of the facilities in Sverdlovsk or elsewhere that have been the subject of the US allegations."**

**Matthew Meselson  
UNIDIR NEWSLETTER  
United Nations Institute for Disarmament Research  
Geneva, vol 2, pp 10-13, June 4, 1991**

page 351A: *“His reversal, in the November 18, 1994, issue of Science...came more than two years after Russian President Boris Yeltsin ”*

This falsely conveys the slanderous impression that we unprofessionally withheld our evidence for two years and that we were doing nothing but procrastinating during that period. It also implies that the statement of Yeltsin (made without any supporting details and with who knows what political fish to fry) made it unnecessary to establish the facts scientifically and reliably. All that Yeltsin is reported to have said is “When there was an anthrax outbreak, the official conclusion stated that it was carried by some dog. Although the KGB had already admitted that our military developments were the cause.” (Komsomolskaya Pravda 27 May 1992). We learned of Yeltsin’s statement a few days after he made it, when we were already at work in Russia, after months of planning our on-site investigation. It never occurred to us that Yeltsin’s statement would substitute for solid proof. Further, a “reversal” implies that I had asserted that the meat hypothesis was correct. I thought it plausible, yes—but always with insistence that on-site investigation by independent experts was required to learn the truth. In the end, it was independent private citizen-scientists who, after a huge amount of planning, work in the field, and analysis, finally produced the solid evidence.

Long before our 1994 Science paper, in December 1992, I communicated the pathoanatomical part of our study to the Proceedings of the National Academy of Sciences. I extensively edited and submitted the paper as a sponsor but I did not include myself as an author -- in conformity with ethical practice in science publishing which I have always followed. (Only those who make or analyze the observations, advance the theory, or write the paper should be listed as its authors.) I then published an article in the April 8, 1993 ASA Journal stating that the pathoanatomical materials of Abramova and Grinberg, as reviewed by our pathologist team member David Walker, provided cogent evidence for “inhalational, not intestinal anthrax” and I repeated this in interviews published at that time.

There followed almost a year of intensive interviewing, translation, and map making, including an investigation of animal deaths and other crucial aspects by Guillemain and me during our second on-site investigation in Sverdlovsk, in 1993. This led to the decisive epidemiological maps that proved the outbreak was caused by an aerosol release and that the release originated at the military facility. I first sent the epidemiological paper to Nature, on March 1,

1994. John Maddox, the editor, said they would run it, but his staff dithered for months and finally told us they would run it only if we would cut it drastically, causing a delay of nine months before we finally got it published in Science.

page 351: *“Still, Meselson was impenitent. His lack of remorse infuriated intelligence analysts who had warned of Soviet duplicity from the start.”*  
Highly misleading and derogatory.

First, our Science paper clearly states “The impression left on those of the present authors who took part in the U.S. meetings (eg, with the Soviet physicians in 1986) was that a plausible case had been made but that additional epidemiological and pathoanatomical evidence was needed.” In the article, we then go on to present decisive proof that what we had thought and said to be plausible was actually entirely wrong.

Second, warning of “Soviet duplicity from the start” is not the same as having the facts. If the anonymous “intelligence analysts” think they had convincing evidence, why were they unable to convince agnostics among the senior analysts who were fully aware of all the intelligence, including Josh Lederberg (as you have written), Howard Whitford (CIA), and others? The implication is that the anonymous “analysts” allowed ideology to shape their views.

Here and elsewhere, the one-sided use of anonymous sources is slanderous. Did you talk about these matters with any of the highly knowledgeable long-time senior officials, such as Ambassador Donald Mahley or former Deputy Director for Intelligence and Director of the Arms Control Intelligence Staff, Douglas MacEachin?

page 351C: *“...they felt he was still being intellectually dishonest, still covering for the Soviets, by downplaying how much anthrax had leaked”*

Anonymous slander that casts unfounded aspersion on my professional scientific competence and integrity.

The Soviet story is just as false if the outbreak was caused by 10 mg of anthrax aerosol as for a 1 gram or any other amount. So how could any particular estimate be “covering for the Soviets”.

Also, it is false that the data kindly sent to me by Bill Patrick, via a third person, conflict with my initial estimates or helped to “refine” my calculations, as I subsequently published in detail in the June 8, 1995 ASA Newsletter. In fact, the Science estimates are at the high end of the values in the ASA Newsletter.

Using standard atmospheric diffusion models, case fatality rates, and the US Army’s long-standing estimate of anthrax dose-response, my 1994 estimates of “a few milligrams to nearly a gram” of anthrax spores are entirely correct. (And were checked at my request by the Dutch Defense Research Establishment.) I was as astonished as you say Patrick was at the smallness of the estimated amount of aerosolized spores. Please understand that the crucial thing here is the dose-response model. The Army model is based on experiments with monkeys and even these can be affected by many variables. We simply do not know the dose-response relation for any human population. My calculations, like all others for anthrax, are illustrative only and were intended as a check to confirm that what happened at Sverdlovsk could be associated with a feasible release of anthrax aerosol.

My reaction to the surprisingly low estimates was that anthrax spore aerosols are much more dangerous than I had thought. The case fatality rates we estimated at Sverdlovsk were in the low percentage range. If the Army’s dose-response model is right, it would take very much more than a gram to have obtained high case fatality rates. Since estimated munition requirements for offensive use aimed for very high fatality rates, I think we were all thinking in those terms—hence the surprise. But to make something sinister out of it is way off base.

page 351D: “As Meselson unraveled the ~~did his Sverdlovsk episode reversal~~, the US team in Iraq...”

The editing here is inappropriate. Why deny that it was our team that finally established the truth about the Sverdlovsk outbreak. Even “unravel” downplays the enormous effort that went into our investigation.