Swedish Laser Chief Reviews Soviet Superweapon

"Do the Russians have a Superweapon?" queried Professor Erik Witalis, Chief of laser weapons and security for the Swedish National Defense and Research Center, in an editorial page feature in the Swedish conservative industrialist paper Svenska Dagbladet *June 1. Witalis' feature begins with a brief review of postwar strategic weapons development from bombers to nuclear submarines. It continues:*

...The latest contribution (to these developments —ed.) is a low flying monstrosity called the 'cruise missile' which, with a detailed map in its computer memory follows the mountains and dales of the terrain until it reaches its target. With ordinary radar it is impossible to detect it in time. Over the Horizon — OTH radar which sees over the horizon, perhaps will solve that. In the Soviet Union we know that there was OTH research development when several months ago the entire world protested the disruption of radio signals.

The development up to now has been a vicious circle where a new development leads to a counter-development. In spite of all these technological refinements, they are hopelessly inadequate to give any real defense against nuclear guided missiles. This includes most emphatically the low-flying ones, whether individually or in salvos, regardless of whether they are launched from the ocean, atmosphere or outer space or sent directly ground-to-ground.

The situation is now one of total destruction for both parties in a general nuclear war, often referred to as MAD (Mutual Assured Destruction). The 'Superweapon' is thus not some monstrosity even more destructive than the H-bomb, but rather the 'death ray,' which with the highest energy speed in physics — the speed of light — destroys with unerring precision everything in the air or in space that can be thought to have a nuclear charge.

Decisive Progress

Is there a superweapon? "It is likely that the Russians are at work developing this," says, or more accurately screams the influential journal, *Aviation Week and Space Technology*, in its May 2, 1977 issue. The journal argues in its lead article that the Soviets have achieved such a decisive technological breakthrough in applied high energy physics that the U.S. nuclear strike force can soon be neutralized. These developments are detailed in a long article in the journal.

The eight-page article, upon a thorough reading, reveals itself to be far from a detailed elaboration of Russian developmental work toward a remote controlled destructive proton beam weapon. Rather, it is a wordy and rather jumbled assemblage of a few interesting indicators, essentially from satellite observations, with speculations, known facts and, in one case, clear error. The factual contents of the article cannot be evaluated independently of an evaluation of the journal's public credibility which must be compared with information from other sources...

Unconfirmed Information

On the fifth of February, some three months before *Aviation Week*, the *Washington Star* gave unconfirmed reports that the Americans as well as Soviets sought to develop a particle beam as a weapon against nuclear warhead missiles. In contrast to the modest and sparse American efforts, the Russian effort is of the scale of the Manhattan Project, that is to say the entire immense effort that led to development of the first atom-bomb!

But one accelerator expert with close ties to the Russians, Wolfgang Panofsky, flatly denied that the knowledge of the technology for such an achievement existed. The paper also queried Richard Garwin, a well-known researcher at IBM and an expert defense consultant. He corroborated the sporadic American researches since 1960 and indicated some of the difficulties: atmospheric penetration and curvature of the magnetic field...

Horror Picture Painter

On April 22, *Science*, a respected general science journal, took up the new weapon. A clear answer could be expected and it was indeed provided: an established 'superhawk,' a just-retired air force general, famous for painting horror pictures of the Soviet capabilities compared with America's defense capabilities, is the source of the rumors of the superweapon! It is understood that the general deeply disdains scientists — "worse than ostriches" — with the exception of the handful of young 'physics geniuses' he himself employs. *Science* queried a number — anonymously — of experts, and expressed the conclusion which can best be characterized as a shrug of the shoulders.

Satellite Picture Hints

Science might have been right but could have been more deliberate. The satellite photos *Aviation Week* writes about showed the hint that some unknown development work was going on near an atomic research center near Semipalatinsk in southern Russia.

A well-cordoned concrete-reinforced structure has been built; and in the environs so much stone has been blasted out that it is enough for several small mountains. A portion of two large steel spheres was built but disap-

peared down a deep shaft. Hydrogen gas is delivered in through a central location in the project; tank trucks with liquid hydrogen, flames of burning hydrogen gas and both hydrogen and the hydrogen isotope tritium have been indicated by high altitude satellite.

Aviation Week openly speculates on the application of all this. Strangely enough they have not done so with two alternating critical nuclear gas reactors coupled with an MHD generator. This is an old, and, from a reactor safety standpoint, hair-raising idea for direct and virtually unlimited electricity production.

Three Main Lines

One would be mistaken if one connects an hypothetical proton beam weapon with the enormous magnet,a high vacuum system and long tunnels typical for the accelerators, 'atom smashers,' with which high energy physics investigates the inner structure of the atom. A part of their technology, for example assembly of many single particles in a storage ring which is then gathered together in a single pulse, can however be immensely important. The central problem of accelerator technology has its most feasible solution within plasma physics, the theory of electrically charged gases.

With the prospect of peaceful development of fusion power as an energy source, right now an almost explosive growth in constructing proton beams in plasma has occurred. Here it can be mentioned that experimental work in the West currently follows three main lines of development, referred to as the "reflex triode," "magnetically confined diode" and "pinch beam."

A theoretical school in the closely related area of plasma-wave interactions has developed at Chalmers Institute in Gothenburg under the direction of Prof. Hans Wilhelmsson. International symposia have been organized several times at Aspenasgaarden in Lerum. Those who then heard the U.S. and Soviet "theoretical heavy-weights" in intellectual infighting need have no doubts of the quality of the *public* portions of the Russian fusion research.

Recently in the U.S. unexpected revelations, unexpected that is for the Americans, have been made regarding the *non-public* portions (of Soviet fusion research-ed.). Irritated by a sarcastic commentary, researcher Leonid Rudakov from the Kurchatov Institute in Moscow gave an astonished American audience a ruthless crash lesson in the superior method for creating a peaceful "miniature h-bomb:" "Substitute for laser light the x-ray beam produced at the point of impact of electron beams!" The method is truly better, but presupposes an entirely superior knowledge in electron beam physics.

Exceptionally Important

There is a significant difference between laser and nuclear particle beams, for example proton, in the beam weapon connection. The laser is by its nature a light beam and works on the surface of solid materials. Penetration can only be accomplished through certain materials. But it is these exceptions, for example, the optics in a reconnaissance satellite, which are important. A fast proton can penetrate all materials, the stopping depending on the energy incident on the solid, regardless of the type or construction. The damage occurs in the solid material, worst in those with complicated microstructure such as is encountered with semiconducting electronics or living organisms. Damage of a special type can be expected from nuclear reactions.

'Sputnik Of The Seventies' Revisited

Why The Red Army Doesn't Need The Cyber 7600

Syndicated columnist Jack Anderson disclosed on June 13 that Jimmy Carter has personally intervened to stop the sale of the U.S.-built Cyber 7600 computer to the Soviet Union, on the grounds that this "electronic marvel" could be used to "track (U.S.) missiles, decode secrets, and improve nuclear production." Anderson, journalistic *pissoir* for many of the State Department's calculated "leaks," notes that it was National Security Advisor Zbigniew Brzezinski who rushed the decision through the Oval Office and into implementation, and heartily congratulates himself for originally revealing the planned computer sale and prodding the government into action.

As the cast of characters in this charade attests, the publicized Cyber 7600 flap has nothing to do with technology per se but everything to do with politics.

Former Air Force Intelligence head Major General Keegan and others created a furor last month with revelations in *Aviation Week* magazine that the Soviets were on the verge of developing — perhaps have already developed — a "beam superweapon" that would make mincemeat out of the United States' strategic missile forces. As the "Sputnik of the Seventies" series in the U.S. Labor Party's newspaper, *New Solidarity* showed in detail, the Soviets were able to develop such a capability precisely because they, unlike the Rockefeller-faction incompetents who have dominated U.S. defense over the last several Administrations, have devoted tremendous resources to basic science researches centering on the plasma physics questions raised by controlled thermonuclear reactions — fusion power.

To redirect the uproar sparked by this exposé of the Carter Administration's treasonously stupid war policy, conservatives, military leaders, and the man in the street are being told, via the Cyber 7600 story, that even if the Soviets have such a "superbeam," their limited computer capability makes it impossible for them to track incoming missiles or, therefore, bring them down with a beam weapon — "and we'll make sure they never get the capability, too." So, the argument goes, the planned war buildup of B-1 bombers and the rest of the (actually already obsolete) military porkbarrel can proceed as planned, with the anti-Soviet banners flying.