

and showing the strength of galactic magnetic fields.

This suggestion was based on an observation by Dr. Peter Zeeman, the Dutch physicist who showed in 1896 that the spectral line of an optical wavelength is split into several components by a magnetic field. The degree of splitting of a particular wavelength, either for light or radio waves, indicates the strength of the field.

The radio waves emitted by the interstellar hydrogen clouds in the Milky Way offered astronomers a chance to make the Zeeman-effect measurement directly, once adequate equipment was available. Dr. Wild and Dr. John G. Bolton, also of Australia, first tried this in the late 1950's; since then, many groups have made unsuccessful attempts.

There was a false alarm in 1962, when Dr. Gerritt L. Verschuur, then at Jodrell Bank in Britain, reported he and his co-workers had detected the galactic magnetic field.

Now Dr. Verschuur has, in fact, detected the Milky Way's magnetic field for the first time, using the 140-foot radio telescope at the National Radio Astronomy Observatory in Green Bank, W. Va.

Although the galactic magnetic field is exceedingly weak by terrestrial standards, it is strong enough to have a powerful influence on the formation of stars and planetary systems, as well as the stiffness of the Milky Way's spiral arms.

Earth's magnetic field is about half a gauss. In the two regions measured by Dr. Verschuur, in the directions of the strong radio sources Taurus A and Cassiopeia A, the field strengths were respectively three millionths and 20 millionths of a gauss. Dr. Verschuur attributes his success now to the sophistication of the 140-foot radio telescope at Green Bank and to a new, highly flexible 400-channel radio receiver. The latter was developed by NRAO engineers A. M. Shalloway and Robert Mauzy, based on a concept by Dr. Sander Weinreb.

Dr. Verschuur says measurements made since his report was submitted to the Sept. 9 PHYSICAL REVIEW LETTERS indicate that the hydrogen clouds may be rotating, which could be due to a collapsing gas field—possibly a star in formation. He is still analyzing his most recent results and will not take another look at galactic magnetic fields until December.

Meanwhile, theoreticians will have a chance to check their calculations concerning the strength of the Milky Way's magnetic field and its implications for stellar birth and evolution, as well as its impact on the theories of the structure and life history of other spiral galaxies. ◇

POLITICAL SCIENTISTS

View to the east: confederation

Nationalism in Eastern Europe, heavily trampled by Russian army boots, may have to take on a non-national cloak in order to survive.

Sentiments revived over the last decade in Eastern European countries hark back to the independent and traditional (and often competitive) histories of each nation. But the realities of power have created an atmosphere which leads many politicians to believe that nationalism may be possible only through some kind of latter-day pan-

reports of new thinking in Czechoslovakia—a renewed consideration of what kind of Central European unit might be established. They were also told that Czechs and Slovaks—artificially joined after World War I—have finally been forged into a single nation on the anvil of the invasion.

But the fact that political scientists could envision several different constellations in Eastern Europe indicates how much traditional rivalries still rule.

Dr. Andrew Gyorgy of the Institute for Sino-Soviet Studies at George Washington University, for instance, conceives a possible union between the three western, Catholic, states—Poland, Czechoslovakia and Hungary.

A third political scientist, Dr. Roy D. Laird of the University of Kansas, views all the talk of unity as little more than a dream at the moment. "I can see Tito trying to effect some kind of pan-Slavic movement," he says, "but I don't see it happening in the foreseeable future."

Nevertheless, Dr. Laird agrees that nationalism in Eastern Europe must eventually prevail over even Soviet strength. Both the United States and the Soviet Union ignored the national-



Paul Conklin

Gyorgy: all bets off.

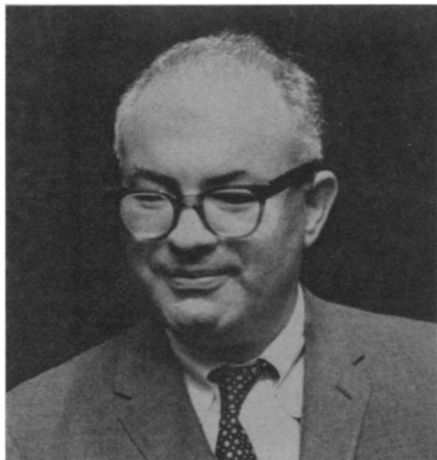
Slavic union which could offset Soviet power.

The immediate effect of the invasion of Czechoslovakia seems to have been to stimulate supra-national feelings. "There is talk of reviving some form of the Austro-Hungarian Empire," says Dr. George Klein, a Czech-born political scientist now at Western Michigan University.

"This is a resurgence, not of traditional nationalism, but a consciousness that little states cannot go it alone," says Dr. Klein. As one indication, he notes that the Czechoslovaks and the Poles show evidence of reducing their historic rivalry.

Czechs fraternized immediately with Polish troops sent in with the invasion force, Dr. Klein point out. Hungarians were met with somewhat more reserve, but "the presence of East German troops shocked the people," who remember the years of Nazi occupation. Dr. Klein describes a possible alliance of Yugoslavs, Czechs and Poles that would be a counterpoise against both Germany and Russia.

Dr. Klein was one of several political scientists who met in special sessions devoted to Czechoslovakia at the Washington meeting of the American Political Science Association. Members heard



Paul Conklin

Klein: German troops shocked.

istic emotions until the Hungarian revolt twelve years ago, says Dr. Laird, and he believes the feeling will overcome Russian dominance just as it destroyed the Austro-Hungarian Empire, and perhaps may even lead Ukrainians and Georgians to break away from Russia.

Ironically enough, 23 years of centralized communism in Eastern Europe might provide the theoretical framework within which Eastern European states could overcome their mutual antagonisms.

About two years ago, says Dr.

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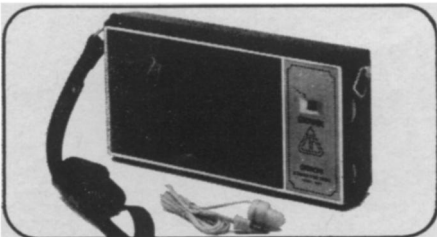
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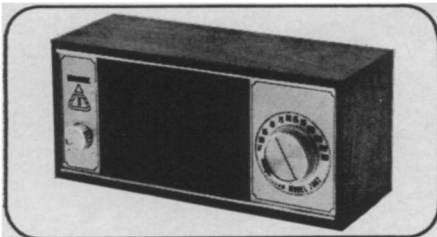
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Gyorgy, intellectuals in the more liberal nations began discussing a political vision which would merge national interests of independent states with the demands of a Marxist utopia and internationalism.

The talk was coming from Communist theoreticians and was being discussed in the press, says Dr. Gyorgy. "In meetings such as this, very interesting and searching papers would be presented on things to come."

Although most of the talk was highly theoretical and often vague, this future utopia was taking shape as a socialist commonwealth, according to Dr. Gyorgy. It proceeded on the assumption



Paul Conklin

Laird: pan-Slavic movement a dream.

that socialism would remain in Eastern Europe, but in the form of a mild, non-police state with some type of federation.

Coexistent with this utopian idea and rivaling it was the resurgence of romantic nationalism, a feeling that almost completely denies the 20th century. Czechoslovaks, for instance, were recalling their culture and heroes of centuries past. They were issuing new stamps depicting the 18th and 19th centuries and evoking the pre-Hitler, pre-Stalin era in religion, language, music and literature. Moreover, the Czechs irritated a Russian sore by referring to themselves as "western Slavs," and culturally superior to eastern Slavs.

Russians have also looked traditionally to the West as culturally superior, and this piece of snobbery hit hard.

Such national nostalgia could be projected into the future in a Marxist framework; the two are not necessarily exclusive, Dr. Gyorgy points out. "But now all bets are off," he says. Any movement in that direction depends on the withdrawal of the Soviet military.

"Seven years of German Nazism and 23 years of Russian domination should have taught these people a lesson. But whether they have learned enough to hang together, no one knows."

INFLUENZA

Girding against a new strain

Hundreds of thousands of Americans have been inoculated against flu. But flu comes in many kinds, and the current vaccine—although pointed at several types of viruses—has little effect against a newcomer that has afflicted at least 400,000 persons in Hong Kong.

The Asian city was the source of the 1957 epidemic in the United States. Fears that it may provide a springboard for another one have caused the Public Health Service to ask eight pharmaceutical companies to begin production of a specialized vaccine.

On September 4 the PHS advisory committee on immunization practices met at the Communicable Disease Center in Atlanta, Ga., and amended its spring recommendations. Last May there seemed little likelihood of an epidemic during 1968-69 except on the Pacific Coast. In 1967 all except four states—Oregon, California, Idaho and Nevada—had had outbreaks of influenza-like illnesses, and epidemics generally run in cycles.

This is not the scheduled year, but the threat is emerging.

Since the new vaccine cannot possibly be ready for public distribution before late fall or early winter, the high-risk population, the old people and the chronically ill, are advised to get the presently available vaccine. When the new vaccine is produced, they should be the first to receive it.

The U.S. armed forces all over the world as well as American civilians abroad will be given the new Asian flu vaccine as soon as it is ready.

Fewer than 25 deaths are reported in the summer Hong Kong epidemic; the Public Health Service does not anticipate serious cases—but there could well be millions of sick people worldwide.

So far no cases have been reported in the United States, but considering the amount of travel between Hong Kong and this country, it is expected that the strain will jump the ocean.

For the production of the new vaccine, the Division of Biologics Standards of the National Institutes of Health has provided seed virus from the new Hong Kong strain to Parke, Davis & Company, Merck Sharp & Dohme, Wyeth Laboratories, Lederle Laboratories, Eli Lilly and Company, Pitman-Moore, National Drug Company and Chas. Pfizer & Co. Inc.

The companies estimate from three to six weeks will be necessary to develop the new vaccine, but the Public Health Service requires three months of testing after that.

The peak of the flu season is between January and March.