which under the conditions of the experiment (in the physiological solution at pH 4·40) remain in colloidal dispersion. Thus, these proteins are not rich in glycoprotein fractions.

TABLE I

Total amount of proteins and the protein-bound hexose in the brain tissue fraction (soluble at pH 4·40) of various animals

	Bound hexose in mgm. for 100 gm. fresh tissue			Total proteins in mgm. for 100 gm. fresh tissue			
	No. of animals	Mean value	Mean quadratic deviation	No. of animals	Mean value	Mean quadratic deviation	%
Rat ..	28	5·07	0·75	17	650	50	0·78
Guinea-pig ..	10	4·96	1·04	10	724	74	0·69
Rabbit ..	13	4·29	0·62	13	580	112	0·74
Dog ..	2	8·0	0·20	2	676	101	1·18
Pig ..	10	5·85	0·75	11	548	30	1·07
Frog ..	11*	7·6	..	11	530	..	1·43
Carp ..	23†	32·0	5·37	14‡	552	153	5·80

% = per cent. of bound hexose of the total protein; * = 1 determination, † = 7 determinations, ‡ = 4 determinations.

On the contrary, we found an approximately sixfold amount of bound hexose in carps. When taking into consideration that the amount of total proteins in brain tissues of carps does not differ from that of the other animals under investigation then bound hexose forms almost 5% to 6% of the protein value. Consequently, the brain of the carp must be fairly rich in glycoprotein fractions.

The higher mean quadratic deviations both for bound hexose and the total proteins in carps are due to the fact that in 3 carps which we investigated in December the values were considerably higher than in those which were investigated in spring. It is assumed that the same dependence on the season is being dealt with as could be proved for the glycoproteins of the blood serum in frogs (subsequently again in cold-blooded animals).[4]

The problem is under investigation in order to clarify these findings.

1. Lang, B. A., Kubiek, R., *Acta univ. Palac. olomuč* 1957, **13,** 281.
2. Stary, Z., Bodur, H. and Lisie, S. G., *Klin. Wschr* 1953, **31,** 339.
3. Lang, B. A., Mikula, F., Trnečka, J. and Bohuněk, V., *Ibid.,* 1959, **37,** 639.
4. — and Vrublovský, P. (in the print).

TELSTAR—THE U.S. COMMUNICATIONS SATELLITE

WHAT was indeed a major break-through in global communications were accomplished when on July 10, 1962 the U.S. successfully launched into orbit the first active communications satellite, *Telstar,* from the launching base Cape Canaveral in Florida, by means of a three-stage 90-foot Thor-Delta rocket.

The satellite is circling the earth every 157·8 minutes at speeds ranging from 18,830 m.p.h. at farthest point to 11,220 m.p.h. at nearest. The orbit ranges from 3,502 to 593 miles from the earth and is inclined at 44·7° to the equator. The satellite itself is a hollow aluminium and magnesium sphere, 34·5 inches in diameter and 170 lb. in weight, covered with 3,600 solar battery cells which collect energy from the sun and store it in 19 nickel-cadmium cell batteries.

Unlike the passive Echo satellite, a spatial reflector which is used to bounce signals over long distance, *Telstar* is a working satellite. It contains a miniature communications receiver, an amplifier, and a retransmitting device.

On its fifth orbit, just 15 hours after *Telstar* was launched, the first telephone conversation was exchanged, the message being relayed through *Telstar* "as easily and clearly as over land." Then followed transmission of still-pictures and "live" television demonstrations.

The working process is as follows: Ground antenna, following the satellite across the sky, transmits radio signals on a frequency of 6390 Mc. with a power of about 2 kw. The signals cover a frequency band of 25 Mc. broad enough to carry one television channel, 600 one-way voice channels or 60 simultaneous two-way telephone conversations. The signals are amplified 10,000 million times by the satellite and retransmitted on a frequency of 4170 Mc. and a power of 2½ watts. By the time the signals reach the earth they have a power of only a billionth part of a watt or less. It is therefore necessary to have a large highly sensitive antenna on the ground, like the 177-ft. horn antenna at Andover, to catch the faint signals. At the ground stations the signals are amplified once again, and transmitted out over the usual communications circuits, such as land lines and micro-wave relay networks.