these cells. Although it does not appear likely that the lymphocytes and eosinophils are completely different in their life span from the other leucocytes, final certainty on this point must await further experimentation.

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Manuscript received August 6, 1951.

Significant Spatial Distribution Patterns of Minerals in the Coeur d'Alene District, Idaho

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In the Silver Belt of the Coeur d'Alene mining district, deeply buried high-grade oreshoots are found in carbonate-quartz veins. A plan map of the area has been published (*1*), and the geological problems involved in ore-search have been discussed (*2*).

A spatial distribution study has been made of the minerals of the area to determine which have distribution patterns indicative of the proximity of ore. Such minerals are called "indicators." The genesis of each mineral has been interpreted as an aid in the evaluation of the spatial distribution patterns.

Disseminated arsenopyrite forms envelopes around a number of the highest grade oreshoots. In horizontal or vertical cross sections, these envelopes have an average width of less than 15 ft; viewed normal to the plane of a vein, an envelope would appear as a halo of roughly 500-ft radius around an oreshoot. Similarly, late hydrothermal chlorite is considered to be an indicator; however, it is rather sporadically scattered in zones which tend to be umbrellalike in form above oreshoots, and which appear to extend as far as 3,000 ft above ore in some cases. Sericite and carbonates of prehydrothermal-vein origin have a negative significance as indicators; i.e., little ore has been found in areas where these minerals are concentrated. Also, since beds rich in detrital quartz are the best ore horizons, such quartz is considered to be an indicator of limited practicability.

In an attempt to clarify the origin of chlorite, six genetic types of chlorite are defined in the Coeur d'Alene District. These are chlorite in detrital biotite; diagenetic chlorite in certain strata; early, hydrothermal-vein chlorite; contact-metamorphic chlorite in and near the monzonitic intrusives; late, hydrothermal-vein chlorite; and chlorite resulting from the alteration of diabase and lamprophyre dikes.

The hydrothermal-vein history of the district is divided into three stages. In chronological order these are: the bleaching alteration stage, the carbonate-quartz stage, and the sulfide stage. The hydrothermal bleaching alteration of large areas of the country rock is largely the destruction of the rock pigments, and no strong sericitization appears to be involved, as previously believed. Regionally, the only exposed sedimentary rocks are those of the Algonkian Belt series; sericite is a major constituent of these rocks. If additional sericite is formed in the localized, bleached areas of the Algonkian rocks, it is a relatively negligible amount.

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Manuscript received August 10, 1951.

DDT Resistance in Korean Body Lice[1]

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Contrary to expectation, routine application of 10% DDT powder to a large group of Korean military personnel during the winter and spring of 1951 resulted only in an increase of infestation with the body louse (*Pediculus humanus corporis* Deg.). The method used was essentially that employed by Soper *et al.* (*1*) in 1943, except that power dusters were used. The dust is applied without the removal of clothing. The DDT came from various sources, including a large stock of American manufacture that had been in storage for 5 or 6 years. Tests with mosquito larvae, however, demonstrated that it had retained its full insecticidal potency. The diluents most commonly used were talc and pyrophyllite.

The group of men treated increased rapidly in size during the first 3 months, then remained relatively stable. By the end of the second month it was possible to replace clothing worn by new arrivals with uninfested clothing. The number of layers of garments to be treated was thereby materially reduced. Living conditions were steadily improved so that bathing and clothes-washing facilities became readily available by the fourth month.

Despite these improvements, and the weekly application of DDT louse powder to all personnel, the percentage of infested persons increased steadily. During

[1] The opinions and assertions contained in this article are the private ones of the writers and are not to be construed as official or reflecting the views of the Navy Department or the Department of the Army.

TABLE 1

REARING OF BODY LICE ON CLOTH IMPREGNATED WITH DDT

	Test 1		Test 2	
	0.1% DDT	Control	0.1% DDT	Control
Total newly hatched lice at beginning of test	153	58	189	54
Percentage surviving to adult stage, 15 days at 80°–90° F	34	67	36	83
Percentage eggs hatching	$\frac{270}{383} = 70$	$\frac{430}{541} = 79$	$\frac{250}{376} = 66$	$\frac{271}{367} = 74$

the month of May, the fifth month of routine application, over 34,000 lbs of 10% DDT powder were used. The percentage of infestation by weeks for the month of May as determined by a random check of about 3% of the men was 35.5, 49.2, 51.0, and 42.4, respectively.

To determine whether more frequent application would give better results, a segregated group of 40 infested men was treated every third day for 15 days. Another group of 40 men, 20 of whom were infested and 20 apparently uninfested, were treated similarly and housed together in a separate tent. On the fifteenth day 35 were still infested in the first group and only 5 remained uninfested in the second group.

Impregnation of clothing and blankets by immersion in a 2% DDT-xylene emulsion was somewhat more effective, but not sufficiently so to merit adoption as a control measure. In a segregated group of 84 men whose effects were so treated, daily counts showed that the percentage of infested individuals dropped from 68% before treatment to 17% on the eighth day after treatment, then increased to 38% by the fourteenth day. Observations were discontinued at this point because it was not practicable to keep the group segregated for a longer period.

In laboratory tests 3 samples of 10% DDT louse powder applied to cloth at the rate of 0.021 g/sq in. gave mortalities for adult lice which ranged from 33 to 65% in 24 hr, with 27–45% remaining normal. Nine such tests were performed, using 20 lice per test. A fourth sample containing 5% DDT powder in Pyrax, kindly furnished by W. V. King, U. S. Department of Agriculture, Orlando, Fla., and known to be of acceptable potency against a standard laboratory strain of body lice, was tested in a similar manner. Ten tests, using 20 lice each, gave an average mortality of 46%, with 34% remaining normal after 24 hr exposure. When lice were confined within treated sleeves, which could be worn, thus permitting normal feeding, there were 41.5% normal test lice and 48% normal controls at the end of 48 hr in one test, and 60.5 and 61.7%, respectively, in a second. Under similar test conditions a powder containing 0.25% DDT gives 100% mortality in a standard laboratory strain of lice (*2*). The second test utilized the sample of proved potency previously mentioned. Four hundred lice and 10 subjects were employed in each test.

Lice were reared through their complete life cycle and produced a large number of viable eggs on cloth impregnated with 0.1% DDT solution in acetone (Table 1).

Cloth impregnated with a .05% solution is lethal to a standard laboratory strain (*3*). The solution of DDT used to impregnate the cloth was tested against the fourth instar larvae of *Anopheles sinensis,* a highly sensitive insect, and in two trials gave 83 and 90% mortality, respectively, in 24 hr, in a concentration of 1 part in 10 million. This DDT had been in storage as a 10% powder in talc for 5 years. Chemical analysis gave the DDT content as 10.4% by weight.

Since 1947 DDT resistance in houseflies has been reported from numerous localities where DDT has been in use. Laboratory experiments have demonstrated that resistant strains can be developed by selective breeding (*4*), and this has been interpreted as indicating that such a process occurs in nature. It seems probable that an analogous condition exists in the body louse. Hitherto, great dependence has been placed on DDT for the control of typhus. It now appears to be of uncertain value, being unsuitable for this purpose in some localities.

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Manuscript received September 18, 1951.

Transition Energy Determination for Orbital Capture

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An element decaying by orbital electron capture to the ground state of the daughter element has x-rays of the daughter element as its principal detectable emission. There are, however, undetectable neutrinos and a weak but detectable γ-ray continuum (*1*). This spectrum is analogous to the continuous γ-ray, generally called "internal bremsstrahlung," accompanying β-ray transitions (*2, 3*). The spectrum of the γ-rays accompanying the β-transitions extends up to the maximum energy of the β-rays, and in the K-capture transitions the spectrum extends to the transition energy plus the energy obtained from the K-electron captured by the nucleus. The energy from the K-electron is the rest energy of an electron (0.511 mev) less the K-orbit binding energy.

The shape of the γ-ray spectrum to be expected