been made in a separate series of experiments, in which the results are susceptible to probit analysis. Large numbers of test insects were used. Evaluation of survival was made 40 hr after each test was completed. Insects were exposed on films of the standard concentration mentioned for different periods of time. The probit regression lines fitted to the data show that the LD_{50} for the original stock, before selection began, was 2.59 min for females and 2.01 min for males (*3*). After 9 months of selection, the corresponding figures are 11.26 and 7.48 min. These indicate that the resistance of the females is 4.35 times, and that of the males 3.72 times, as great as that of the original stock.

This increase is of the same order as that recorded in *Drosophila melanogaster* Meig. by Weiner and Crow (*4*), who used a different selection method and a different test surface. They recorded an increase in resistance of 3.22 times in females, and 4.47 times in males, after 1 year of selection.

The results obtained with *M. ancylivorus* are regarded as promising, but no releases are planned until the DDT resistance has been increased to the practicable limit.

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Manuscript received September 4, 1951.

Study of the Light Metal Carbonyls Formed by the Reaction of Carbon Monoxide with Light Metals Dissolved in Liquid Ammonia[1]

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During the past few years we have been studying the nature of the products formed by the reaction of carbon monoxide with light metals dissolved in liquid ammonia. If the reaction is carried out so that the excess ammonia is allowed to evaporate after the metal has completely reacted (as evidenced by the disappearance of the blue color), the resulting product is a solid and is referred to in the literature as a carbonyl. Measurements by Joannis (*1, 2*) and others of the ratio of weight of product to weight of initial metal sample indicate that these solid carbonyls have the composition expressed by the formula $M(CO)n$, where n is the electrovalence of the metal M. These solid carbonyls are extremely unstable and react instantaneously with traces of moisture or oxygen. Their instability has prevented the study of their properties except for a few investigations of the products formed upon decomposition.

In our experiments we have found that the addition of ammonium chloride (or hydrogen sulfide) to the reaction product before evaporation of the liquid ammonia results in the formation of substances that are reasonably stable and susceptible to the usual methods of handling and testing.

When the sodium carbonyl is treated with ammonium chloride as described above, the final product is a mixture of several subsbtances. We have succeeded in identifying three of these: rhodizonic acid, in the form of either the ammonium or the sodium salt; glycollic acid amide; and glycollic acid. The amounts formed vary with conditions of the experiment. So far the evidence suggests that the best yields of rhodizonate and the amide (about 15–20% in the case of the amide, based on sodium consumed) are obtained when the sodium metal is added in small amounts at a time so that it is only slightly in excess during the reaction, and the greatest pains are taken to prevent the entrance of oxygen and moisture into the reaction flask. The product in the liquid ammonia is generally colored at the completion of the reaction and undergoes a color change upon adding ammonium chloride. In experiments under optimum conditions, the sodium carbonyl forms in the flask as a grape-colored product, and the addition of ammonium chloride converts it to dark-red.

These results with sodium show that the reduction of carbon monoxide in liquid ammonia solution leads to the formation of rather varied and complex polymeric units of carbon monoxide. There appears to have been only one previous attempt to identify the carbonyl products. Joannis (*3*) added water to the liquid ammonia solution of potassium carbonyl at the completion of the reaction and, from the stable products he obtained, he was able to separate one which he identified as glycollic acid. In our experiments, glycollic acid amide is separated from the reaction products directly by extraction with dioxane or ether. Our experiments offer the first evidence also that a ring compound can be formed from carbon monoxide in liquid ammonia. It is of interest to recall here that Nietski and Benckisser (*4*) showed that carbon monoxide gas reacts with molten potassium to form a product which they identified as potassium hexahydroxybenzene. Attempts to duplicate the fused potassium reaction using other light metals have been reported as yielding negative results.

In our experiments we have also used lithium, potassium, calcium, and barium for preparing carbonyls. Although these experiments have not been carried out with the improved technique we have developed for working with sodium, it is superficially evident that the products obtained with these metals will not necessarily be the same. Examination of the reaction product of potassium carbonyl by chromato-

[1] This work was supported by funds from the ONR under contract N8-onr-71600. The study has been underway for three years and has been participated in by a number of students, some of them as part of their senior thesis projects. Those whose work contributed directly to this report are Gordon D. Barnett, Herbert L. Hergert, John K. Long, Sidney Leahy, Henry Moe, L. Richard Roberts, P. R. Ryason, Grant A. Thorsen, Edwin Ullman, and Francis F. Wong. Florence Lyle, Marion Besserman, and Roger York worked on the problem as research assistants.

graphic analysis has shown that this product contains three organic acids, one of which we have been able to identify as glycollic acid. It may be noted that we have found titration in glacial acetic acid to be a good method of analyzing the reaction product for rhodizonate. Our titration experiments suggest furthermore that this is a promising means of studying the rather puzzling barium salts of rhodizonic acid and related compounds.

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Manuscript received September 6, 1951.

Localization of Brain Tumors with Radioiodide[131] [1]

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Radioactive diiodofluorescein (DIF*)[2] and radioactive iodinated human serum albumin (RIHSA*)[2] have been employed with great success in isotope-encephalometric localization of brain tumors (*1–4*). These agents are not specific for cerebral tumor tissue. The localization obtained with an isotope-encephalometer is merely indicative of an area in the brain in which the blood-brain-barrier has been disrupted, thus allowing extravascular diffusion of anions. At this clinic a constant effort has been made to further simplify and improve the procedure. It has been demonstrated that iodine[131] as NaI*[3] may be used in place of DIF* or RIHSA* and give very satisfactory results.

The procedure calls for an oral administration of a tracer dose of NaI* of about 300/μc to the patient suspected of having a brain tumor and who has been "lugolized" to block the thyroid. Lugolization of the patient is accomplished by giving Lugol's solution 10 drops three times daily for 3–4 days starting 24 hr prior to the administration of the tracer. The effectiveness of this technique has been reported elsewhere (*1*). After lugolization, the thyroid uptake of I^{131} by the end of 24 hr is less than 1% of the administered dose. The NaI* is excreted rapidly through the urine (30–70% in the first 24 hr); thus 3–4 days of lugolization are more than adequate to safeguard the thyroid gland.

Best results can be obtained by waiting for an hour after the oral administration of NaI* before the head survey is started. With the scintillation counter (*5*) at present in use the counting rate will reach, over different positions of the head, 4000–7000/min. This is roughly half the cpm obtained 24 hr following intravenous administration of RIHSA* of the same amount of activity as NaI*; or that obtained half an hour following intravenous administration of ½ mc of DIF*.

TABLE 1

SUMMARY OF 16 CASES*

Patient	IEM	How verified	Diagnosis
G.O.	No focus	Negative angiogram	No tumor
H.F.	Left deep temporal focus	Angiogram and air study	Not operated upon because of advanced heart disease
J.K.	Left deep frontotemporal focus	Angiogram	A-V angioma
G.T.	Right temporal focus	Craniotomy	Glioblastoma
C.H.	Right frontal focus	"	Astrocytoma
F.L.	Left temporal focus	"	Metastatic tumor
P.M.	Anterior fossa focus, probably midline	"	Olfactory grove meningioma
L.H.	Left frontotemporal focus	X-ray	Metastatic from breast cancer
D.V.	Right midtemporal	Craniotomy	Astrocytoma
J.H.	Right temporal-parietal	Negative air study	No tumor
E.R.	No focus	Negative air study	" "
M.S.	Left post-fossa focus	Craniotomy	Chronic inflammatory process
R.S.	Right temporal focus	"	Glioblastoma

* Nine tumors correctly diagnosed, 2 tumors ruled out, 1 chronic inflammatory focus localized, 1 false positive, 3 under observation.

Up to the time of this report 16 patients have been studied with this technique. A summary of the isotope-encephalometric and other diagnostic and/or operative findings is given in Table 1.

Table 2 illustrates a case of correct localization by using NaI*.

In this case, the highest "differential uptake" ever recorded in this clinic with I^{131}-containing tracers was obtained. In most of the tumor-positive patients of this group the "differential uptake" was greater as compared with those of the same types of tumors subjected to either the DIF* or RIHSA* techniques re-

[1] Supported in part by grants from the National Cancer Institute of the U. S. Public Health Service and the U. S. Atomic Energy Commission.

[2] Both DIF* and RIHSA* are obtainable from Abbott Laboratories, North Chicago, Ill.

[3] Obtained from Oak Ridge National Laboratory. (Note: Sometimes radioiodine[131] is shipped as an iodate.)