credit, Homœopathy has yet been able to appeal to the people in general. The reason why even it's cheapness of price does not attract the attention of the common people, is again the same love of glamour.

There are many instances which can be cited by the experienced people in this line that people resort to homœopathic treatment only when all others have given up all hopes in a certain case. Such cases were brought to Homœopaths for the first time, not for treatment but for a last trial. Fortunately many such cases also have been saved by Homœopathy.

VERATRUM VIRIDE IN HYPERTENSION

DR. HENRY W. EISFELDER, M.D., F.A.G.S., NEW YORK

Veratrum viride is an American plant commonly known as green hellebore.[1] As with most botanicals, its chief alkaloids are protoveratrine (0.03 to 0.08%), jervine (0.01%), and rubijervine and veratroidine of which only traces are found. It is believed, however, that veratroidine plays an important part in the clinical use of the drug.

Although these alkaloids differ in some respects, they all have certain actions in common which justify consideration of them as a whole. All lower blood pressure, partly by action on the vasomotor centre, but chiefly on the vessel wall associated with weakening of the heart by direct action on its muscle. The cardiac vagus is first stimulated and then depressed and paralyzed. The respiratory center is depressed. Veratrine also causes a peculiar alteration in the voluntary muscles, leading to a very slow relaxation after contraction.

In the earlier days when bloodletting was a common procedure, veratrum viride was called a "therapeutic lancet" because, as H. C. Woods put it, "it bled a man into his own veins."

Veratrum formerly enjoyed a wide use in all schools

of therapy in the treatment of pneumonias, but perhaps that was due in part to the earlier consideration that the disease was a pneumonitis, a "sthenic inflammation," to be reduced by bloodletting. With our present concept of pneumonia as a primary infection, the use of the drug has decreased in both schools.

Veratrum is incompatible with alcohol, opium, ammonia and heart stimulants, and is antidoted in cases of overdosage by fluid extract of strychnin (20-40 drops) or 1/100 gr. atropine sulphate given subcutaneously. Also, large doses of caffeine or strong tea will excite excretion of the drug by the kidneys and at the same time stimulate the weakened heart and nervous system. Emetics are rarely needed as large doses of *Veratrum* usually cause vomiting which carries off most of the drug.

Since there has been a rather wide-spread interest shown in *Veratrum* and its alkaloids over the past few years, we have decided to limit this paper entirely to the effects obtained in our clinic and private practice on hypertensive patients only. Great care was taken to make sure that only those results were tabulated where we were sure the patients could be trusted to have taken no other medication, and were of sufficient intelligence to cooperate fully in our investigation.

In December, 1951, when we thought we had almost completed the survey, we received a communication from the Medical Division of the Federal Drug Administration asking that we push the dosage to a point where frank nausea and/or vomiting developed. They felt that such information was necessary considering the potential wide-spread use of the durg by a large number of physicians under various circumstances. We had never approached this level because we had obtained satisfactory results on lower dosage levels, but, after discussing the pros and cons with several of our private cases, we decided to make a proving on several male volunteers, results of which will be discussed later.

With so many constituents having such diverse actions, it is no wonder that the drug was regarded with some suspicion, because of the variable and unpredictable results. The official standard merely stated that the drug should contain "not more than 5% stems and foreign matter." Further, the crude drug was quite often adulterated in commerce with the rhizomes of allied plants, whose alkaloidal content varied considerably. The advent of more specific therapy and the untrustworthy action of *Veratrum viride* caused it to be one of the "discarded" vegetable drugs.

In 1943, Craig and Jacobs isolated some of the alkaloids and studied their general chemical structure. Clinical trial on a somewhat limited scale seemed to corroborate extensive animal studies showing a significant reduction in arterial pressure with doses well below the lethal dose.

Since that time, a great deal of chemical, pharmacological and clinical work has been done by many investigators, particularly Jacobs, Krayer and his collaborators, Wintersteiner and collaborators, and Maison and collaborators. In the course of these studies a large number of active principles have been isolated from *Veratrum viride*. Since all of the potent hypertensive components of the crude drug are in the so-called amorphous fraction, their separation is very tedious and time-consuming. However, at least five very potent substances have been isolated and identified.

The present *Veratrum viride* preparations are still mixtures not susceptible to chemical standardization. The drug gives promise, however, of being a useful addition to the limited and unsatisfactory armamentarium now available for control of hypertension, provided a way can be found to standardize the preparations of the drug with reasonable dependability.

Early in this work a unit, defined as the "Craw" unit, was advocated. This is based on observation of the heart-

beat of daphnia. Obviously, this method measures the "cardiac principles" and not the vasodilating or hypotensive effect. Since recent work on the chemistry of the drug now indicates that it may contain over 20 alkaloids and that some have a pharmacologic action directly antagonistic to some of the other constituents, it is quite obvious that in order to obtain a dependable product the standardization must perforce be based on the desired action, i.e., the hypotensive effect. Stating *a priori* that the cardiac effect is an indication of the hypotensive activity is misleading and can be a dangerous assumption.

An alternative method has been developed whereby the fall in blood pressure of normotensive dogs is used as the criterion in assaying mixtures obtained by selective fractionation of extracts of the crude drug. Admittedly, this assay is not as satisfactory as a rigid chemical assay, but at least it does give, within reasonable limits, an indication of the desired activity of the drug.

The preparation of *Veratrum viride* used in this study was made according to the latter method and supplied by the S. E. Massengill Company. It is a mixture extracted by selective methods and standardized for its hypotensive properties on dogs. If *Veratrum viride* is really of any value in the management of hypertension, this preparation should give a significant indication of this in clinical use.

Of the 47 cases followed for periods from six months to over two years we have had excellent results in 36 cases, good in eight and poor in only three. The latter group was composed of one case of sensitivity to the drug where even small doses of 1 mgm. b.i.d. caused nausea. The other two were from the clinic series and, because of finances, could not cooperate on low salt and selected diet and showed drops in blood pressure of less than 20 mm. during the period of treatment. Those listed as good had not only the general feeling of well being and relief from most of their subjective symptoms, but had a minimum drop of 20-30 mm. in blood pressure.

We have taken pressure on both arms as a routine, since we have noted that frequently before a cerebral accident there is a wide difference in the two sides, and thus we have adopted a standard wherein we consider a difference of up to 6 mm. normal and anything beyond that as potentially pathological. In several instances, where the difference exceeded 30 mm., we have, in the past, found a cerebral accident on the high side and paralysis on the lower one, so feel justified in making our conclusion as stated.

Before giving any of the regular series, we should like to present a couple of the cases pushed to higher limits in order to determine toxic effects. The usual dose, may we state here, is 3 mgm. t.i.d., p.c., or q.i.d. In the two cases now presented we pushed the dosage to 21 and 20 mgm. daily before the patients rebelled.

Case J. L., aged 73, stated that in 1946 his blood pressure was over 250 systolic and he had had a series of severe attacks of epistaxis. In the following four years his pressure was gradually reduced to 130/80. When he came to us in 1951 we found a blood pressure on the right of 234/126 and on the left of 190/110. He complained of headache, vertigo, tremors and "pill-rolling." *Diagnosis*: Hypertension with early evidence of Parkinson's Disease. *Clinical results*: "Pill rolling" stopped in eight days. Dose first two weeks was 3 mgm. t.i.d. Every other day a 3 mgm. tablet was added until he reached a dose of 21 mgm. daily. When he took 6 mgm. t.i.d. he had severe gastric distress and nausea, but a change to 3 mgm. every two hours for seven doses daily did not seem to upset him. In two months he had leveled off at 194/110 on both sides, and we decided to cut him back to the normal dose of 3 mgm. t.i.d. While it had been gradual his pressure continued to drop and when last examined in the spring of 1953, he had no complaints and exhibited an equal pressure of 152/80 on both sides. In view of his inability to adhere to strict diet, since his income prohibits that, and

the fact that he is now 76 years of age, we feel his case justifies a report of "excellent."

A second case where excessive amounts of drug were given was G. L., aged 47, weight 209 lbs. He had complained of a severe headache lasting over a month. Ophthalmologic examination by a specialist revealed no visual defects, but hemorrhagic areas in both fundi were found. Urine showed occasional finely granulated casts and 20-30 pus cells. Balance normal. Therapy started 11/30/50 with dose of 2 mgm. q.i.d., gradually increased to 3 mgm. q.i.d. His blood pressure at the start was: right 236/146 and left 204/146. A urinary antiseptic was used along with the *Veratrum* in this case until 12/27/50 when the urine became normal. At that time his pressure had dropped to right 170/114 and left 166/120. To that point his dose was only 3 mgm. t.i.d. Until December, 1950, he remained in the neighborhood of 170 to 180, but had gained weight to 212¾ lbs. and was doing considerable overtime work. He remained symptom-free, however, and headaches had never returned.

The suggestion was made that he increase the dose to determine his tolerance and by 1/22/52 he was up to 5 mgm. q.i.d. Some nausea was noted, but instead of a drop in pressure bilaterally, we found he again became unequal with the right 180/120 and left 164/110. Since increasing the dose had no evident salutary effect on this case, we placed him on a maintenance dose of 3 mgm., q.i.d. and have checked him monthly up to June, 1953. His last reading was 158/100 on both sides, and although his weight varies between 202 and 204, he hasn't a single complaint and works an average of 10-12 hours daily six days a week.

One outstanding case was that of E. B., a 60-year-old lady who had a hypertension of the cardio-renal-vascular type. For months she had 2.5 to 5 mgm. albumin/100 c.c. and pus cells constantly present. From 5/23/51 to 7/3/51 she was on a dose of 3 mgm. t.i.d. and had to stop because she felt the drug produced severe headaches.

When she commenced treatment her pressure was 184/130 and dropped to 160/100, but on stopping it went to 210/118. We thought she was allergic to *Veratrum* and also considered the possibility that she had a pleochromocytoma because of an unusual amount of hirsutism. While out of our control, this patient had an auto accident and was hospitalized for fractures. Evidently the shock produced a cerebral accident as she lost almost entire vision in her left eye and could only distinguish between light and dark. Reports from the specialist attending her at Nassau Hospital were gloomy indeed as he predicted eventual complete blindness.

In June, 1952, this patient returned to us with a blood pressure of 206/126 and an ECG. taken then revealed left axis deviation and left bundle branch block. Cortunon, the liver hormone with cardiac action, was prescribed, and a trial of *Veratrum viride* 3 mgm. b.i.d. was given. Whether the two drugs were synergistic or not remains a question, but this time there did not seem to be any reaction to *Veratrum* as we had had when it was first prescribed. Thereupon the patient was given the normal dose of 3 mgm. t.i.d. and has been carried on that to date.

An ECG. taken May 5, 1953, showed results similar to the previous one, but the patient had a feeling of well-being far in excess of any previous check-ups. This we feel was due to the Cortunon, but certainly the drop in blood pressure to right 188/106 and left 168/110 must have been due to the *Veratrum* effect. At the examination on June 1, 1953, her blood pressure hit the lowest levels since we have had her case, 164/94 right and 160/90 left. She claims marked improvement in vision in the bad eye and says she is doing all her housework and wants to know how soon she can take on additional outside activities.

While the latter case shows an excellent result we must admit that in part, at least, some of the improvement might have been due to the hormone given with the *Veratrum*. We could, however, go on with a detailed account

of each of the other 35 cases where results were listed as excellent, and no other remedy but *Veratrum viride* was used. In our opinion, we have in *Veratrum viride,* prepared according to the method described, an outstanding remedy for hypertension.

Before concluding this paper, it might be important to issue a warning as to some of the other *Veratrum* preparations now presented to the profession and enjoying wide-spread publicity at the present time. We refer to the injectable forms of the *Veratrum alkaloids.* Two cases who had previously done well on oral medication and had failed to carry on after getting substantial drops in their pressure returned with abnormally high readings.

We had recently been detailed on the new product for intramuscular and intravenous injection and thought we would try to get a rapid effect before putting the patients on a maintenance dose of the oral product. Fortunately, we did not try the I.V. method, but gave the I.M. injection as directed, ¼ cc. at a time, at 10 minute intervals, total dose being 1 cc. The first case remained recumbent for 30 minutes and was allowed to leave. By the time he reached the subway, his hands were so numb he had to ask a passer-by to take his fare from his pocket and deposit it in the turnstile. He complained of severe vertigo and nausea, but, since we did not see him for a week, we had no idea how low his pressure had gone, aside from the drop while in the office of over 40 mm.

The second case forced us to decide against the injectable form. After three injections of ¼ cc. each at 15 minute intervals, the blood pressure took a sudden dive from 234/120 to 80/0. While the atropine was being prepared for injection, systolic dropped to 56 and the patient became cyanotic and appeared in extremis. It took a second injection of atropine to cause a slow rise and after over an hour of extreme worry, the patient became conscious. This was followed by simultaneous emesis and catharsis and we can assure you the office was a mess and

nurse and doctor were almost as exhausted as the patient. Within 24 hours full recovery took place, but we have sworn off injectable *Veratrum* for good.

In conclusion, we wish to thank Dr. Paul E. Carman of the S. E. Massengill Company for supplying the drug used in these experiments and for his cooperation in not rushing us to a too early conclusion as to results. We are definitely certain that when the *Veratrum viride* is prepared according to their formula as aforementioned, we can expect similar results to those we have mentioned.

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ABOUT DR. BOYD REPORT

The British Homœopathic Journal's editorial in the issue containing the Boyd report says :

"The reputation of homœopathy as a system of therapeutics has waxed and waned for 150 years. Though, from time to time, it has been said to be on the decline, it has never ceased to attract the attention of enlightened medical and non-medical opinion. The increasing frequency with which we have had the opportunity to publish contributions dealing with various aspects of homœopathic research is an encouraging feature of present-day homœopathy which speaks well for its vitality.

"One of the main criticisms of homœopathy has been directed against the infinitesimal doses commonly used. It was said that such doses, being in a state of extreme attenuation, in which none of the original substance could be demonstrated by ordinary chemical or physical analysis, could not have any effect whatsoever. Successes were explained away as being due, either to withdrawal of the over-medication of ordinary medicine, or to faith. Prac-