

GALINSOGA.*

A Preliminary Report.

BY EDWARD C. REIF.¹

Galinsoga, well known to the gardener and farmer as a persistent weed, is an annual, exceedingly common in Pennsylvania. It grows wild in settled regions, truck gardens and vacant lots. It is seldom found growing in wooded areas. The presence of this weed in the region of the State College was first reported in 1887 by Prof. J. P. Kelly. A specimen in the herbarium at State College of Pennsylvania was collected at Pittsburgh by Thomas C. Porter in 1869.

The United States Department of Agriculture reports that Galinsoga is widely distributed in this country. The Iowa State College of Agriculture reports that it has been introduced as a weed at Osage, Iowa, (Mrs. F. May Tuttle), at Strawberry Point, Forest City, Montrose and McGregor, Iowa. They also report having specimens from New York, Virginia, Pennsylvania, Missouri, Michigan, Ohio, Wisconsin, and also from Mexico. The weed is known locally as Pittsburgh Weed and has been classified by Dr. Otto E. Jennings of the Department of Botany of the University of Pittsburgh as *Galinsoga parviflora*. He states—"it is a weed which is adventive from Porto Rico."

The genus *Galinsoga* is described in "Gray's Manual:" Several-flowered heads, radiate; rays 4-5 small, roundish, pistillate. Involucre of 4-5 ovate thin bracts. Receptacle conical with narrow chaff. Pappus of small, oblong, cut fringed, chaffy scales; sometimes wanting. Annual herbs, with opposite triple-nerved thin leaves and small heads; disk yellow; rays white or reddish. The species *parviflora*: pubescence subappressed; leaves ovate, crenate-serrate, petioled; pappus of the disc flowers of spatulate obtusish scales, and equaling the akenes. Rays white.

The species *Caracasana*: pubescence loose and rather copious; leaves as in the genus *parviflora*; rays reddish; pappus of the disc flowers about half as long as the akenes. This has been reported from the wastes of New Jersey (Camden) and the mill district of Cumberland, Maryland.

The weed has been widely used by the farmer in this region as a remedy for ivy poisoning by applying the freshly crushed plant to the affected areas. The United States Department of Agriculture reports that it has been used in the treatment of wounds.

As a preliminary to the pharmacological study of the weed three fluidextracts were prepared according to the type process A of the U. S. P. X. The material selected consisted of the carefully dried, above-ground parts of the flowering plant, in which, all stems over 3 mm. in diameter were rejected. In the preparation of these fluidextracts, alcohol of varying strength was used as the menstruum, namely, twenty-five (25), fifty (50), and seventy-five (75) per cent. These fluidextracts were stored for one month, after which they were filtered and analyzed for alcohol content and extractive yield. The results upon analysis are shown in the following table:

Menstruum used, alcohol per cent.	Finished product, alcohol per cent.	Extractive yield Gm. per 100 cc.
25	20.035	22.22
50	47.995	16.02
75	69.11	16.92

The fluidextract made with 50% alcohol as the menstruum was used in the experiments upon the turtle, frog and guinea pig. The other two were used in the experiments upon the frog.

A distinct disturbance in the rhythm of the auricular and ventricular contractions was noted when the isolated heart of the turtle was bathed with a 2% dilution of a fluidextract in saline solution. This experiment was repeated a number of times, using each time a different turtle heart.

Doses of 0.006 cc. of the fluidextract per Gm. body-weight, when injected subcutaneously, cause death in guinea pigs in 24 hours. The following observations were noted: severe sneezing and diarrhoea; severe twitching of the jaws; eye balls were ejected and covered with mucus;

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the respirations at first were very rapid, becoming slow and shallow just before death; paralysis of the hind limbs. The fluidextract used in this experiment was evaporated to one-third of its volume, diluted to the original volume and filtered.

Doses of 0.006 cc. of the fluidextract per Gm. body-weight, when injected into the ventral lymph sac of the frog, cause a marked disturbance in the rhythm of the auricular and ventricular contractions. The number of auricular contractions were far in excess of the number of ventricular contractions. The auricles upon examination were found to be well distended and filled with blood, whereas the ventricles were usually found to be empty. The method of assay as recommended for *Digitalis* U. S. P. X was followed. Before making the observations upon the heart, the animals were pithed in the usual manner, one hour after injection. The fluidextract used for injection was modified as outlined in the previous experiment.

The results of the previous experiments seemed to indicate that a better picture of the action of the weed could be obtained by making observations upon larger animals. The effect upon the respiratory and circulatory systems could be noted and studied, especially the blood pressure and circulatory curves. Accordingly studies upon the dog were undertaken. The set-up chosen for the blood pressure tracings was the one usually selected to record such studies. The respiratory tracings were made in the usual manner with the aid of a pneumograph and tambour. After the tracings of the normal pressure of the dog were made, injections of the fluidextract prepared with a 75% alcoholic menstruum were made into the saphenous vein. A control injection of the menstruum was made between each injection of the fluidextract to obviate any error from this source. Injections were made at 8-minute intervals. Three injections of the fluidextract in 1-cc. quantities and three injections of the menstruum of the same quantity were given. The following results were noted: The control injections caused no change in the blood-pressure curve, or increase in the respiratory rate. However, within 35 seconds after the injection of the fluidextract, a distinct rise in blood pressure was noted. The rise at its maximum reaching a point averaging 14 mm. of mercury above the normal. The pressure returned to normal within two minutes and remained normal. The respiratory rate showed a progressive increase indicating that the effect of the preparation upon the respiratory rate was more prolonged than the effect upon the blood pressure. The normal respiratory rate over equal periods of time was found to be 22, after first injection the rate rose to 27, and after the second to 30, and after the last to 35.

A record of the effects of the fluidextract made with a 25% alcoholic menstruum was next sought. The set-up and the site of injection was the same as in the previous experiment. Control injections of the menstruum were also made between the injections of the fluidextract. The results were recorded as follows: The injections of the control menstruum caused no change in the blood-pressure curve, or respiratory rate. However, the injection of 2 cc. of the fluidextract produced a maximum fall in the blood pressure of 25 mm. of mercury in one minute. Three injections of 2-cc. quantities were made at eight-minute intervals and each injection caused a fall in blood pressure. It was noted, however, that in no instance did the blood pressure return to its normal level. Upon returning to the range of the normal pressure, it was noted that the pressure was from 3 to 5 mm. below the pressure prior to the injection of the fluidextract. The respiratory rate also underwent certain changes. From a normal of 37, the rate was increased to 47 after the first injection, to 66 after the second, and to 106 after the third and last injection.

The anesthetic chosen was morphine sulphate hypodermically in doses of 10 mg. per Kg. body-weight followed in 1½ hours by the injection of chloretone dissolved in olive oil, intraperitoneally, in doses of 225 mg. per Kg. body-weight.

CONCLUSIONS.

1. A saline dilution of the fluidextract of *Galinsoga*, when applied to the isolated heart of the turtle, causes a marked disturbance in the rhythm of the auricular and ventricular contractions.
2. Doses of 0.006 cc. of the fluidextract per Gm. body-weight, when injected into the ventral lymph sac of the frog, cause a disturbance in the auricular and ventricular contractions and a marked slowing of the ventricles.
3. Doses of 0.006 cc. per Gm. body-weight, when injected subcutaneously, cause death of guinea pigs in 24 hours.

4. Doses of 0.000067 cc. of the fluidextract made with 75% alcohol as the menstruum cause a rise in blood pressure of dogs when injected intravenously.
5. Doses of 0.000134 cc. of the fluidextract made with 25% alcohol as the menstruum cause a fall in the blood pressure of dogs when injected intravenously.
6. The possible presence of a principle or principles causing a rise in blood pressure is indicated in the fluidextract made with 75% alcohol as the menstruum.
7. The possible presence of a principle or principles causing a fall in blood pressure is indicated in the fluidextract made with 25% alcohol as the menstruum.
8. The possible presence of a principle or principles causing an increase in the rate of respiration and apparently cumulative in action is indicated in both fluidextracts.

The writer believes that these results justify a continuation of the research, and results will be reported from time to time in THIS JOURNAL. He also wishes to express his appreciation of the very able assistance and coöperation of his co-workers Messrs. Howard Dolyak, Milo Evosevic and John A. MacCartney.

COMMITTEE REPORTS

REPORT OF THE COMMITTEE ON PATENTS AND TRADEMARKS, 1930.

BY F. E. STEWART, *Chairman.*

The late Charles E. d'M. Sajous, M.D., of honored memory, in the introduction of his work on *The Internal Secretions and the Principles of Medicine*, called attention to a most important subject worthy of our thoughtful consideration. He said:

"At the dawn of the present century, one of our foremost clinicians, Llwellys Barker, of Johns Hopkins, wrote that therapeutics is moribund; eight years later, our foremost pharmacologist, Sollmann, wrote at present it cannot be classed as an art nor as a science; it can only be classed as a confusion. To-day therapeutics has been virtually eliminated from the curricula of our largest medical schools. What this means does not seem to have been apprehended by those upon whom rest the responsibility of deciding such questions. They overlook the fact that by allowing therapeutics to disappear from the list of subjects taught, *they are insuring the doom of medicine itself.* Indeed, even empirical therapeutics, that of the day, is at least based upon vast experience and observation, and affords material relief in suffering and often saves life. Virtually deprived of this knowledge by medical schools, graduates of the future will increasingly realize that their livelihood will no longer be earned honestly, unable as they will find themselves to meet the needs of those, granting them unmerited confidence, who will appeal to them for aid. Honorable men will increasingly abandon a career so little in keeping with their true aims, leaving the field open to the unscrupulous, the Christian Scientists and cults of all kinds. The phenomenal development of such in recent years emphasizes already what the future has in store, if legitimate therapeutics is allowed to die."

Dr. Sajous spoke truly. The field of therapeutics, especially drug therapeutics, has been increasingly abandoned by the medical profession. Physicians have increasingly entered the field of non-drug specialties, leaving the field to be cultivated by the commercial drug business and the nostrum manufacturers. So diligently has the field been cultivated by the latter that the legitimate interests of the manufacturers engaged in the pharmacal and pharmaco-chemical industries, as well as the United States Pharmacopœia, the profession of pharmacy, and the schools and colleges of pharmacy, are threatened with extinction.

Referring to the nostrum business, Professor Charles H. LaWall, dean of the Philadelphia College of Pharmacy and Science, in his classic work, "Four Thousand Years of Pharmacy," says:

"Secrecy, mystery and superstition have been the indispensable ingredients of many successful prescriptions and remedies from the time of the earliest Egyptians down to and including the present. The evolution of the nostrum, that