ether – benzene – chloroform – methanol (5 : 4 : 2 : 1) system, spots revealed with a 0.5% solution of $KMnO_4$ in 0.5% H_2SO_4] and mp 196°–198° C (from alcohol), Rƒ 0.19. The present paper gives the results of a study of the substance with mp 154°–156° C, $[\alpha]^{20}_D$ +101.2° (c 2.57; chloroform), $C_{19}H_{22}O_7$.

The IR spectrum exhibits absorption bands in the 3480 cm^{-1} region (OH group), and at 1770 (γ-lactone), 1745 (C=O of an ester grouping or a cyclopentanone), and 1660 and 1640 cm^{-1} (C=C bond).

The presence of a lactone ring in this substance is also confirmed by its solubility in alkalies on heating. In this process two moles of caustic soda are consumed, which shows the presence of another saponifiable grouping in addition to the lactone ring.

Hydrogenation of the substance both in the presence of a Raney Ni catalyst and in the presence of a small amount of Pt catalyst led to the absorption of two moles of hydrogen; the tetrahydro derivative was obtained in the form of a colorless glassy mass which could not be crystallized and had the composition $C_{19}H_{26}O_7$. Dehydrogenation of the tetrahydro derivative at 280°–310° C for 40 min gave a viscous blue oil – an azulene giving a trinitrobenzene derivative mp 128°–130° (from alcohol), which corresponds to the analogous derivative of chamazulene.

By comparing the results obtained with literature data, we concluded that the substance isolated is a new sesquiterpene lactone, which we have called repin.

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SESQUITERPENE COMPOUNDS OF THE ESSENTIAL OIL OF THE FRUIT OF DAUCUS CAROTA

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In the sesquiterpene fraction of the essential oil of Daucus carota L. (wild carrot) growing in the Armenian SSSR, we have identified, in addition to the hydrocarbon daucene isolated previously [1], β-bisabolene and, apparently, farnesene.

We used fractional vacuum distillation and repeated chromatography on alumina (activity grade III, eluant – petroleum ether with bp 40°–70° C) to isolate the sesquiterpene hydrocarbons. The separation of the mixture was followed by means of the IR spectra of the individual fractions.

Daucene $[\alpha]_D$ +23.32°, d^{20}_4 0.8936, n^{18}_D 1.4918, MR 66.31, calc. for two double bonds MR 66.14.

β-Bisabolene bp 110° C (8 mm), $[\alpha]_D$ – 34.2°, d^{20}_4 0.8735, n^{20}_D 1.4900, MR 67.63, calc. for three double bonds MR 67.88, $C_{15}H_{24}$.

A trihydrochloride with mp 78.5°–80° C was obtained, which in admixture with an authentic sample of the trihydrochloride of β-bisabolene gave no depression of the melting point.

The reduction of β-bisabolene in ethyl alcohol in the presence of platinum black gave hexahydrobisabolene (bisabolane) with bp 99° C (8 mm), $[\alpha]_D$ – 3.0°, d^{20}_4 0.8267; n^{20}_D 1.4538; $C_{15}H_{30}$.

The third hydrocarbon, apparently farnesene, could not be separated completely from the β-bisabolene because of its small amount. The fraction containing the farnesene had n^{20}_D 1.4930 (for farnesene n^{20}_D 1.4870 [2]).

The hydrogenation of this fraction in glacial acetic acid in the presence of platinum black gave octahydrofarnesene (farnesane) with n^{20}_D 1.4410.

The IR spectra of the sesquiterpene hydrocarbons that we have isolated and the products of the hydrogenation were identical with the IR spectra of β-bisabolene [3], farnesene, bisabolane, and farnesane [4].

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INVESTIGATION OF THE TRITERPENES IN SOME SPECIES OF PLANTS

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In the investigation of certain plants, various substances have been isolated and identified: from the roots of Fagus taurica Popl., β-sitosterol (I) and betulinic acid (II), and from the roots of Juglans regia L., β-sitosterol (III) and betulin (IV). In the epigeal parts of Salvia beckeri Trautv. we have found betulin (V) and in Cornus mas L. ursolic acid (VI). Ursolic acid (VII) has also been isolated from the stems of Periploca graeca L.

The substances isolated and their derivatives have the following melting points, °C:

Substance	Natural compound	Acetate	Methyl ester	Acetate of the methyl ester
(I)	134–135	117–118	—	—
(II)	—	—	219–221	205–207
(III)	135	116–118	—	—
(IV)	—	213–216	—	—
(V)	256	217–218	—	—
(VI)	277–280	—	—	241–243
(VII)	271–274	—	162	237–239

The results of the analysis of the substances isolated and their derivatives agreed with the calculated figures. The melting points of all the compounds agreed with those given in the literature. Their identity with authentic samples was confirmed by the mixed melting point method.

The general method of isolating the substances consisted of extraction with chloroform, separation of the neutral and acidic fractions, chromatography of the neutral substances on alumina (activity grade III) and of the acids on deactivated alumina, and recrystallization from various solvents.

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A TRITERPENE GLYCOSIDE FROM GYPSOPHILA PATRINII

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Kochetkov, Khorlin, and Ovodov isolated a saponin, gypsoside, from Gypsophila pacifica and established its structure as a nonaoside of gypsogenin [1]. The same saponin was later found in Gypsophila paniculata [2].

The extraction of the roots of a gypsophila (Gypsophila patrinii) collected in the Altai with methanol gave 20% of extract (of the weight of the roots). By means of ion-exchange chromatography on Dowex-1 resin, we isolated a glycoside with decomposition point 175°-185° C, $[\alpha]_D^{18}$ +26±3° (c 4.0; water), mp of the acetate 177°-178° C, $[\alpha]_D^{18}$ +10± 3° (c 1.9; chloroform). The yield of purified glycoside was 5% of the extract.

As the results of a comparison of the constants obtained with those given by the authors mentioned [1] have shown, this glycoside and, particularly, its acetate, have low specific rotations. The same discrepancy has recently been